The newsweekly of enterprise network computing

NetworkWorld

January 31, 2000 Volume 17, Number 5 www.nwfusion.com

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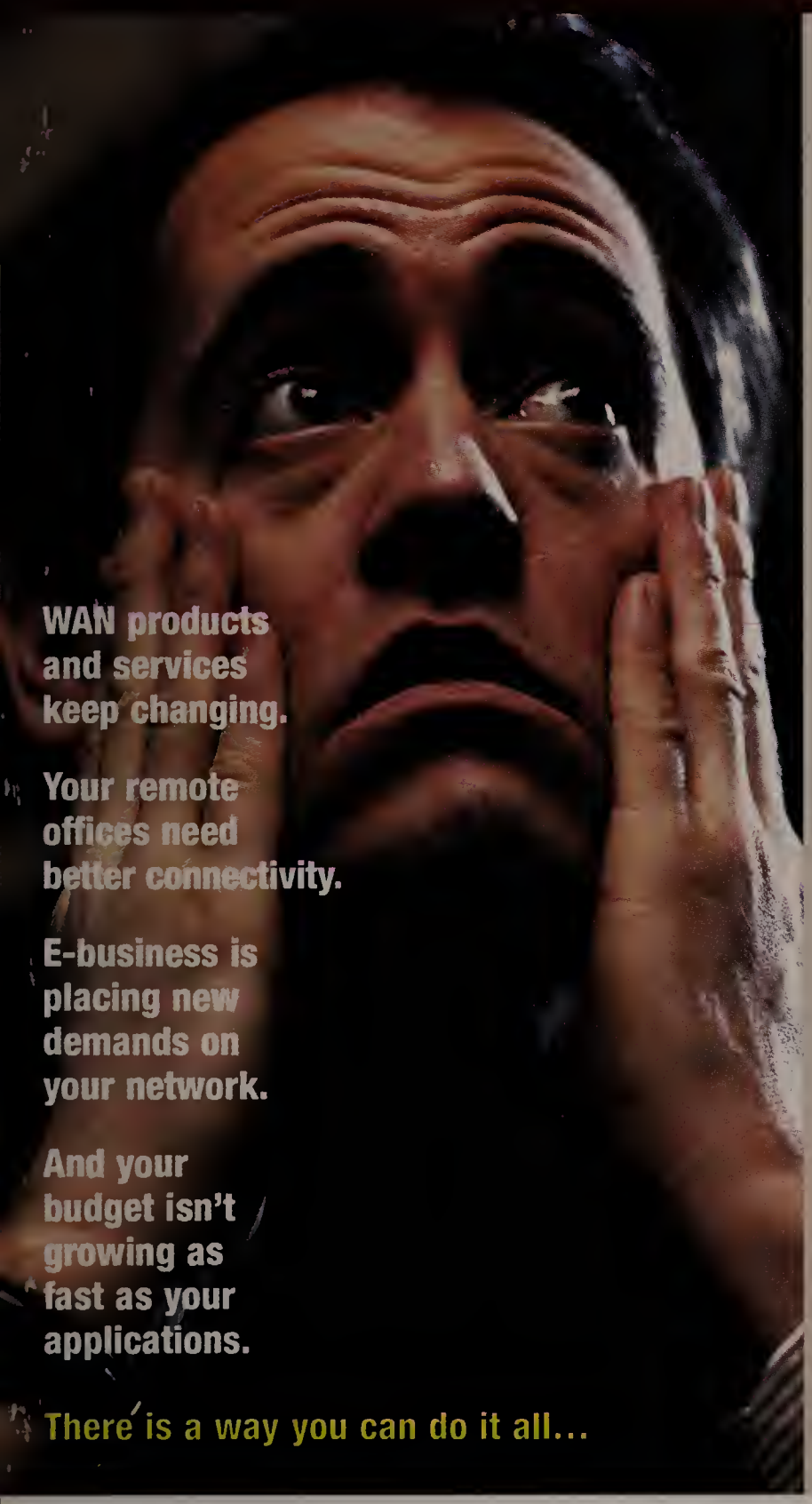

State of the WAN:℠ Capitalizing on New Technologies and Services

NetworkWorld TOWN MEETING

In today's rapidly changing technology environment, being successful means being informed. You need to determine the right mix of services, providers and equipment to meet the demands of your enterprise and users. And while new options seem to appear on the market daily, you need to make decisions today about what's right for your enterprise network over the long haul. While the challenge of making so many decisions may leave you feeling pressured, a little education will go a long way in providing relief and guiding you as you architect, build, and make purchases for your WAN. Register for "State of the WAN: Capitalizing on New Technologies and Services" and get the most up-to-date information available from the experts in the field of wide-area networking. You'll learn about today's most critical areas of WAN management, including the evolving services portfolio, VPNs, DSL, managed services and equipment, access services and equipment, and customer care.

Attend this **FREE SEMINAR** and you will understand:

1. How new integrated access services can save you money, time, and resources
2. Which new services can enhance your WAN portfolio
3. Whether to build your own network or use a managed service
4. When VPNs can solve access problems and when they can't
5. Where IP fits into your WAN
6. Which is the better option for you: Frame Relay or ATM
7. How to identify the best gateway from the LAN to the WAN
8. What new equipment can ease your WAN access problems
9. Which new tools can help you manage your WAN and reduce costs
10. How to enforce service level agreements

Moderated by:

Dr. Jim Metzler, Founder, Ashton, Metzler & Associates

John Gallant, Executive Vice President and Editorial Director, *Network World*

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This event is sponsored by some of the hottest WAN equipment and service providers around. For a sneak preview, turn to the Sponsor Showcase.

TURN TO INSIDE BACK COVER

State of the WAN:℠ Capitalizing on New Technologies and Services

Learn from the Leaders

Jim Metzler

Dr. Jim Metzler is widely recognized as an authority on both network technology and its business applications. In over twenty-eight years of professional experience, he has assisted many of today's vendors in refining their product strategies, and has simultaneously helped over 100 enterprises evolve their network infrastructure. He has worked in many areas of networking, including software tool development, network design, engineering management for high-speed data services, and network hardware product management. An experienced presenter, Jim conducts tutorials on both local and wide-area networking throughout the United States and Europe, and is on the staff at Northeastern University's State of the Art Program in Networking. Together with Lynn DeNoia he has published a book entitled *Layer 3 Switching: A Guide for IT Professionals*.

Ashton, Metzler & Associates
Leverage Technology and Talent for Success

John Gallant

John Gallant is the Executive Vice President and Editorial Director of *Network World*, one of the fastest-growing publications in the computer/communications industry. With more than fifteen years of experience covering the industry, Gallant sets the strategic direction for the newsweekly, which serves 164,000 network IS professionals. Under Gallant's direction, *Network World* has been a leader in covering the emergence of networking in corporate America and has become the newsweekly of record in the network industry. John is a frequent speaker at conferences such as ComNet, Comdex, NetWorld+Interop, and Internet World.

NetworkWorld

Registration, Breakfast and Vendor Demonstrations — **8:00 a.m.**

Today's WAN Landscape — **9:00 a.m.**

Dr. Jim Metzler will examine the direction in which high-speed, wide-area networking technologies and services are moving. He'll deliver in-depth information about the enhancements to Frame Relay, ATM and public IP services, available options for managed services, access alternatives, and new techniques in customer care, giving you a clearer view of the important changes taking place in the industry today.

Vendor Strategies — **9:30 a.m.**

There will be a 30 minute break at 10:30 a.m. for viewing vendor demonstrations and networking with your peers.

Hear how leading vendors are addressing your biggest issues — today. An integral part of the program, brief presentations by technical representatives from the Presenting Sponsor companies will give you big-picture advice on how to capitalize on today's technologies and services.

Key Issues Roundtable — **11:30 a.m.**

This highly interactive exchange between the vendors and Jim Metzler will be led by John Gallant. His hard-hitting questions will help to further compare and contrast the technologies and services presented earlier and set the stage for a lively debate on key issues shaping the WAN industry.

Complimentary Luncheon and Vendor Demonstrations — **12:00 p.m.**

Reality Check — **1:00 p.m.**

Dr. Jim Metzler will tie together threads introduced in the earlier sessions and summarize the major decision points facing network managers in their WAN.

Vendor Solutions — **1:15 p.m.**

Having already addressed the strategies of the WAN, the panelists will present specific products and services along with case studies to illustrate how you can solve some of the issues raised during the course of the program. This is a convenient opportunity for you to compare some of the best offerings on the market — in one place and at one time — and decide which vendor solutions will shape the future of your organization's enterprise network.

The Hot Seat Roundtable — **2:15 p.m.**

You won't want to miss the most exciting part of the day. This roundtable will focus on the future of the industry and what you can expect to see over the next 12–24 months. It's a chance for the vendors to go head-to-head on issues raised earlier in the day, and an opportunity for you to ask them your specific questions. Participate in our "Best Question Contest" and you may win a prize for having the best question of the day as judged by John Gallant.

Closing Remarks and Raffle — **3:00 p.m.**

Throughout the day you'll have the chance to enter our raffle to win a DVD player. You must be present at time of drawing to win.

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February 15	Boston, MA	Sheraton Needham
February 16	New York, NY	Crowne Plaza
February 29	Seattle, WA	Hyatt Regency, Bellevue
March 1	Santa Clara, CA	Santa Clara Marriott
March 14	Atlanta, GA	Cobb Galleria
March 15	Chicago, IL	Hyatt Regency O'Hare
March 28	Denver, CO	Hyatt Regency Downtown
March 29	Dallas, TX	The Fairmont Hotel

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* *The following take-home materials are included in your complimentary registration:*
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Communications Systems and Networks
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NEW ABCs FOR DNS IETF looks to assimilate non-English characters into Domain Name System. Page 6.

SUN'S SPLASH Sun's Zander brags that Solaris outshines Unix rivals as well as Windows 2000. Page 12.

The newsweekly of enterprise network computing

NetworkWorld

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The network portal: www.nwfusion.com

BUYER'S GUIDE

The best of desktop management software.

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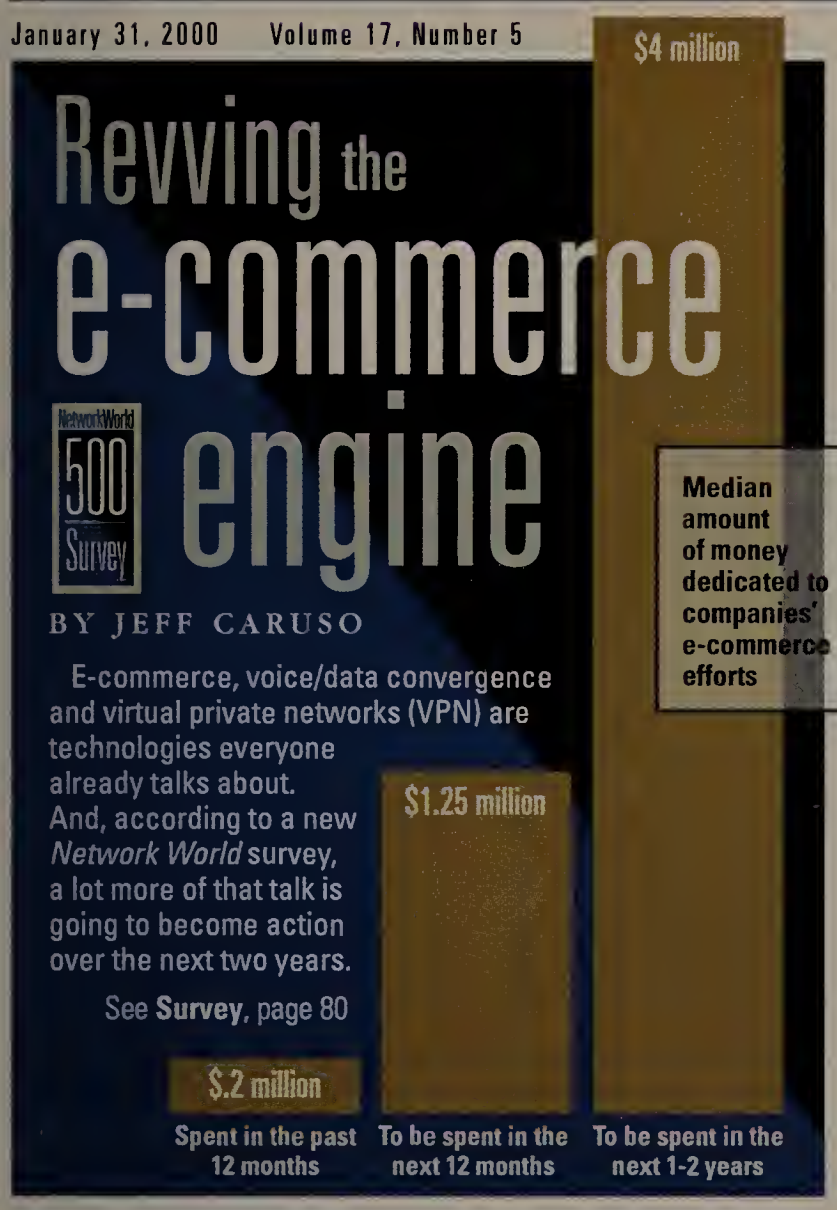
Revving the e-commerce engine

NetworkWorld 500 Survey

BY JEFF CARUSO

E-commerce, voice/data convergence and virtual private networks (VPN) are technologies everyone already talks about. And, according to a new *Network World* survey, a lot more of that talk is going to become action over the next two years.

See **Survey**, page 80



Median amount of money dedicated to companies' e-commerce efforts

Linux turns it up a notch

LinuxWorld to feature slew of new offerings for enterprise network users.

BY JOHN FONTANA

Looking to pique enterprise customer interest in Linux, major vendors this week will unveil clustering technology, embedded systems software and thin-client options for the open source operating system.

At the LinuxWorld Conference and Expo in New York, customers will get their first look at Trillian, a new technology that will let the Linux kernel run on forthcoming 64-bit Intel processors and will help the upstart operating system better compete with the likes of Sun and Microsoft.

In addition to large users, the expo will attract financial titans from nearby Wall Street looking for the "next hot company." Wall Street has been showering Linux vendors with affection since the wildly successful initial public offerings of Red Hat and other Linux vendors in the past few months.

The show will feature the release of the Trillian source

See **LinuxWorld**, page 77

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AT&T, IBM move to bolster ASPs

BY DENISE PAPPALARDO AND MARC SONGINI

Two of the biggest names in corporate networks — AT&T and IBM — last week pledged their support for the application service provider (ASP) market, a development that could result in new services and more credibility for this relatively untested field.

To date, the ASP market largely has been the domain of lesser-known companies — a fact not lost on potential customers hesitant to give up any control of their vital corporate applications and data. Observers say such potential

See **ASP**, page 78

The snowstorm that ate ComNet

Show goes on, but new net technologies debut before smaller crowds.

BY NETWORK WORLD STAFF

WASHINGTON, D.C. — The weather outside was frightful, and the moods of most attendees at last week's ComNet 2000 weren't too delightful after a monster winter storm threw travel plans into disarray, forced the cancellation of long-planned show events and made a general mess of the area.

The annual conference usually draws between 50,000 and 60,000 attendees, but exhibitors estimated that only about half that number made it this year. High-profile events, including *Network World's* Network Operating Systems Showdown and a keynote address from PSINet CEO Bill Schrader, had to be

See **ComNet**, page 16

More coverage inside:

Page 8 Voice-over-DSL products and interoperability make advances.

Page 8 3Com to base its policy management tools on Novell directory technology.

Page 10 Nortel Networks bolsters WAN switches.

Page 16 Our Reporter's Notebook covers the lighter side of ComNet 2000.

Page 78 AT&T launches frame relay voice along with other managed services.

Newspaper $5.00

Are you both attracted and repelled
by the Internet at the very same time?

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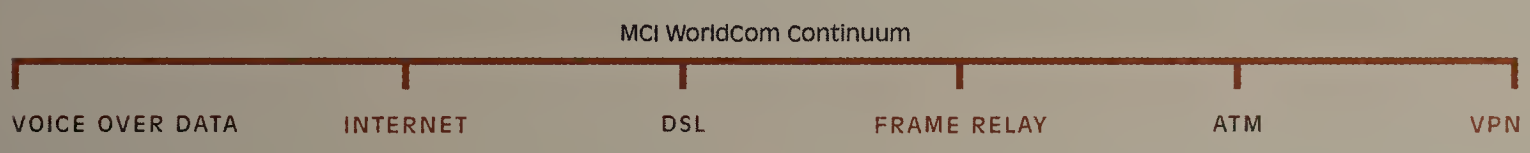
Read on to see how MCI WorldCom used VPN technology to help a pharmaceutical giant get comfortable with the Internet.

It's the classic double-edged sword. On one hand, the Internet opens your business up to billions of potential customers. On the other hand, it opens your business up to billions of potential hackers.

Not long ago, a pharmaceutical giant came to MCI WorldCom℠ with this exact dilemma. They wanted to make sure their customers would only have access to their products. But not their research. So we recommended they install a Virtual Private Network on top of their Internet and Frame Relay services. A VPN would keep their research separate from their products by using everything from firewalls to encryption codes. And because the data would run on our wholly owned, seamless global network,* we'd be able to monitor it from one end to the other.

All of which made this pharmaceutical giant feel a brand new emotion: relief. For more details, visit us at www.wcom.com/data.



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NetworkWorld

JANUARY 31, 1999

THIS WEEK ONLINE

Keeping Current. Couple ad-banner company DoubleClick's plan to track individual users on the Web and an online stalking suit involving Yahoo, and Fred McClimans says enough is enough: It's time to make it illegal to follow people on the Internet without their permission. **DocFinder: 6641**

VPNs. Looking to get up to speed on virtual private network (VPN) technologies and services? We've put together a Research page with handy links to everything from primers and white papers to articles on advanced topics. For example, we've found a nifty self-grading quiz that lets you see how well you know your VPN basics. **DocFinder: 6643**

NetWare Question 1. A user with a faulty NetWare 4.11 server wants to install a bigger hard drive and move it to a new box. Will he run into any problems? Read the reader's description of his situation, then offer suggestions. **DocFinder: 6647**

NetWare Question 2. Another NetWare user has been having trouble ever since he installed Service Pack 4 on his NetWare 5/SAA Gateway setup — he can no longer get his remote offices to connect to headquarters via PPP over his WAN. Read his overview, then tell him what to try. **DocFinder: 6648**

Interactive scorecard. Our reviews come with a scorecard that ranks products in various categories. We realize that every network is unique, though, so starting with this week's review of desktop management tools, we'll be providing an interactive scorecard that allows you to re-adjust the weightings for each category. So if a particular category is more important to you than it was to our reviewers, now you can see how that would affect the overall product scores. Make sure you let us know what you think of this new feature — such as its ease of use and overall usefulness. **DocFinder: 6649**

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HOW TO CONTACT US

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Intel's LANDesk Management Suite 6.3 edged out six other suites in our hands-on testing. Page 49.

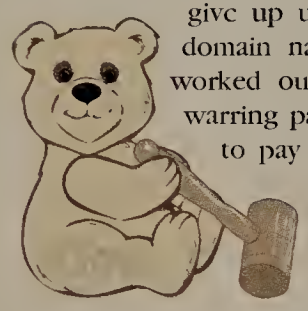
NEWS BRIEFS, JANUARY 31, 2000

W3C releases XHTML 1.0

The World Wide Web Consortium last week released XHTML 1.0, the first in a family of specifications the W3C says will bridge the older HTML that forms the bulk of static Web pages today and the more recent XML. The latter is a format-neutral method for tagging electronic documents for e-commerce data exchange and online searching. XHTML 1.0 is said to be a "reformulation of HTML 4 in XML 1.0" so that XHTML documents can utilize applications, such as scripts or applets, that rely upon either the HTML Document Object Model or the XML Document Model.

EToys and eToy make peace

Faced with growing bad publicity and a dropping stock price, online toy store eToys last week abandoned its legal battle to force the Swiss online art group eToy to give up use of the eToy.com domain name. The settlement worked out between the two warring parties calls for eToys to pay eToy approximately $40,000 to cover the cost of the lawyers eToy had to hire to defend itself against the eToys lawsuit. "This is a great moment in the history of Internet art!" said eToy's leader, who calls himself "Zau."



BroadVision broadens vision

E-commerce software vendor BroadVision last week announced an agreement to buy Interleaf, Inc. in a stock transaction valued at $877 million based on BroadVision's Jan. 25 stock price. BroadVision CEO Pehong Chen said that Interleaf's line of e-content tools based on XML will be help BroadVision manage personalized content delivery between wireless devices and the Web.

Bell Atlantic, GTE file plan

In an attempt to push forward their planned merger, Bell Atlantic and GTE last week filed a proposal with the Federal Communications Commission outlining a plan to restructure GTE's Internetworking business. The filing proposes selling 90% of the GTE Internet backbone division to the public, as well as making $500 million in investments outside of the company's local service area within three years of the completed merger. The appeal is aimed at jumpstarting the stalled FCC approval process that is keeping Bell Atlantic from a $52.8 billion merger with GTE. The merger deal was first announced in July 1998, but is being held up by the FCC because of a regulatory conflict concerning the companies' proposed voice and data long-distance business. While Bell Atlantic has won approval from the government to sell long-distance services in New York State, the FCC ruling bars the company from selling voice and data long-distance services in much of its other local territory.

Qualcomm snaps up SnapTrack

Qualcomm last week said it will buy SnapTrack, a maker of wireless position location technology in San Jose, for $1 billion in stock. SnapTrack will become a wholly-owned subsidiary of Qualcomm and will bring to the deal nearly 50 patents, issued or pending, relevant to the Wireless Assisted GPS (global positioning system) technology, according to Qualcomm. Wireless Assisted GPS is SnapTrack's client/server-assisted GPS technology that uses U.S. government satellites to pinpoint the location of a given wireless device within five to 20 meters.

E-commerce deluge forecast

Gartner Group last week predicted the worldwide online business-to-business e-commerce market will grow from $145 billion today to $7.29 trillion in 2004. The Stamford, Conn. consultancy says that by 2004, business-to-business e-commerce will represent 7% of a forecasted $105 trillion in total global sales transactions.

AvantGo gets new CEO

AvantGo, which makes Web connectivity software for handheld devices, last week tapped a former Dell executive to become CEO. Richard Owen, formerly vice president of Dell Online, will take the reins from AvantGo co-founder Felix Lin, as well as take a seat on the company's board of directors. Lin will stay on as chairman of the board and work with the company's enterprise products group. AvantGo is hoping Owen can do for them what he did for Dell Online: Help it grow into a $30-plus million per day company.

Richard Owen to head AvantGo

Dell backs storage start-up

StorageNetworks, a start-up provider of storage services based in Waltham, Mass., has landed a $103 million round of investment capital from Dell Computer and Global Crossing Ltd. With a total of $205 million raised since launching in August 1998, StorageNetworks executives say they intend to use the latest infusion of cash to finance international growth, including a facility in London.

Move afoot to support foreign domain names

BY CAROLYN DUFFY MARSAN

The Internet engineering community is investigating new technology that would allow the current domain name system — which is based on the English alphabet — to support names written in languages such as Chinese and Japanese that use alternative characters.

The Internet Engineering Task Force (IETF) this week is expected to announce the formation of a working group to explore the technical requirements of internationalized domain names (IDN). The IDN group will consider methods for encoding international language characters into the standard domain name system without causing disruption.

Such proliferation of internationalized domain names would likely mean added expense and management time for U.S. multinational corporations that want to protect their brand names and trademarks in local languages on the 'Net. However, the technology would be a boon to foreign companies that currently cannot buy domain names that reflect their company or product names.

"The idea that you can't put the name of your company as your URL is certainly a problem," says Scott Bradner, co-director of the IETF's Transport Area. "There's a feeling among the people outside the United States that by forcing the domain name system to be in English, we are subjugating the rest of the world. There certainly is a lot of push for us to address this issue."

The domain name system uses the ASCII character set, which includes the 26 letters of the Latin alphabet, upon which the English language is based. The DNS's ASCII foundation is ideal for global communications because English is the common language of business. But it hampers local communications because many of the world's languages — including Chinese, Japanese, Hindi, Russian and Arabic — are not supported in e-mail or Web addresses.

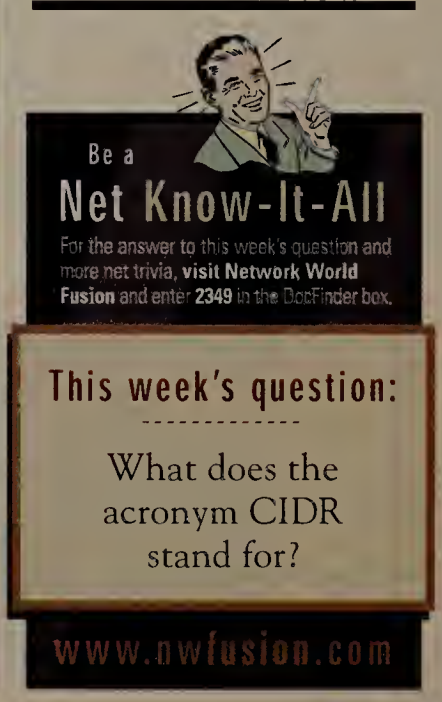
A key challenge for the IETF's working group is coming up with a technical solution that can meet the needs of communities seeking local-language support without splintering the power of the Internet as a global medium, observers says.

"The business community doesn't want to see anything that will undermine the global connectivity of the Internet," says Roger Cochetti, program director for Internet policy at IBM. "The cost and time of establishing domain name registrations in different languages is not trivial, but it's not as compelling as the need for an international marketplace."

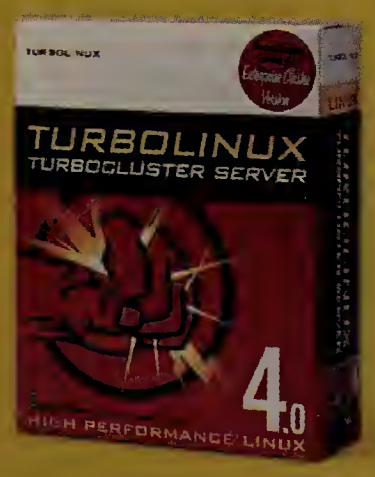
The IETF was prompted to establish the IDN working group by the recent launch of two companies selling domain names in Swedish and Chinese. The companies use different and incompatible approaches to local language domain names.

Sweden's domaininfo.com last month began selling domain names that incorporate special characters such as umlauts under the top-level domain .nu. The company is only selling .nu registrations under the Swedish country code, and customers must own the standard Latin

See **Names**, page 14



How to solve a $50,000 problem for $2,000.



Maybe you don't have the huge budget to integrate all your e-commerce applications with a proprietary solution. Sometimes a severe limitation opens up a whole new way of doing things. Today, more and more forward-thinking IT managers are solving the high cost of integration with TurboLinux. Our TurboCluster Server in the web farm can seamlessly put Solaris, NT, or Linux servers to common purpose.

The accomplishments of TurboLinux have not gone unnoticed. TurboCluster Server won the 1999 Linux Journal Editor's Choice Award for Top Web Solution.

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Voice-over-DSL turns heads at ComNet

Cheaper phone, Internet-access packages in the offing this year.

BY TIM GREENE

WASHINGTON, D.C. — If digital subscriber line gear introduced at ComNet 2000 last week is any indication, inexpensive voice-over-DSL services should be coming soon to a service provider near you.

Vendors Vina Technologies and Efficient Networks debuted voice-over-DSL gear that combines multiple voice channels and wideband data on regular phone lines. Plus, ComNet 2000 demonstrations showing that DSL voice gear made by different vendors can interoperate indicate the technology will soon be incorporated and work together in service provider networks, says Matthew Davis, senior analyst with The Yankee Group in Boston.

"Service providers will want voice capabilities in [customer premise devices] or at least the option to upgrade to voice," Davis says.

Using customer-site routers that combine voice and data onto DSL links, service providers will offer bargain prices by the end of the year — 30% to 40% off the combined phone and Internet access bills customers currently have, he predicts.

The services probably will be packaged so customers pay close to the current prices for phone service and receive Internet access free.

At the show, Vina was showing a mock-up of its DSL e-Link, an integrated access device (IAD) that supports up to 16 regular phone channels on a 768K bit/sec symmetric DSL (SDSL) line. At the same time, a data channel on the connection can hook up with the Internet. The box also functions as a router, DHCP server and firewall. DSL e-Link is scheduled to ship this spring. Pricing has not been set.

Efficient pulled the wraps off its SpeedStream 8600 IAD. Hardware modules for the 8600 can be installed to provide phone ports in multiples of four up to 24. The box supports SDSL and asymmetric DSL (ADSL), and Efficient has plans for more wide area connections. Those include T-1-speed ATM as well as two-wire, high-bit-rate DSL (HDSL2) to give service providers more flexibility on what transport to use. Because different technologies have different distance limitations, carriers can pick and choose the one that makes sense for each customer site.

Other vendors at the show demonstrated their equipment in action. TollBridge Technologies sponsored a bank of DSL phones for reporters to use. And Promatory Communications teamed up with Jetstream Communications to demonstrate that their gear interoperates. Without interoperability, service providers would have to buy from a single vendor, something carriers like to avoid.

Promatory and Jetstream also showed how the gear could be used with an ATM switch to divert traffic around network failures.

Most of the DSL providers are relying on ATM to carry voice and data traffic over the DSL links. ATM is the most reliable technology for imposing quality of service (QoS) on different traffic types and ensuring voice quality, says Peter Meade, a principal with TeleResearch2, Inc., a telecom market research firm.

Eventually, QoS features will be added to IP and vendors will shift from ATM to IP, he says, but that is 18 months away.

Alcatel showed its OmniPCX 4400 voice-over-IP platform, which can integrate computers with telephones and save money by merging corporate voice and data networks.

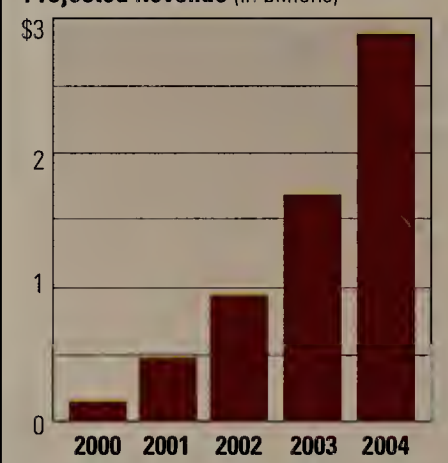
The OmniPCX 4400 is made up of client/server gear that uses corporate IP networks to deliver phone service to corporate desktops. That includes PBX functions such as call forwarding, three-digit dialing and three-way calling, among others.

While the platform includes specialized wired and wireless IP telephones, it also lets customers use regular analog handsets and PCs to make phone calls. ◪

DSL voice set to boom

Voice services using digital subscriber line transport will capture a growing number of customers.

Projected Revenue (in billions)



SOURCE: THE YANKEE GROUP, BOSTON

3Com licenses Novell directory

BY JIM DUFFY

WASHINGTON, D.C. — 3Com last week said it would license Novell's directory service and use it as the underpinning of its policy-based network management technology. Terms of the arrangement, which was announced at ComNet 2000, were not disclosed.

Novell Directory Services (NDS) will let 3Com develop management products that let users delegate network access and resource policies based on user name, rather than media access control or IP address, says Mike Cookish, a 3Com marketing director. Eighty percent of 3Com's enterprise customers already use NDS, he says. "Novell is the clear leader in that area."

NDS licensees

Companies that currently integrate Novell Directory Services into their products include:

- 3Com
- Cabletron
- Lucent
- Nortel Networks
- Sun

3Com will deliver a product that "binds" its Transcend Policy System to NDS servers in the second quarter of this year, Cookish says. This will enable customers to start to define user-based policies.

By year-end, 3Com will add user-based network access policies to the Transcend software. This will enable customers to use NDS to recognize LAN-attached or remote VPN users and assign network access and resource profiles accordingly.

In mid-2001, 3Com will integrate and ship NDS with the Transcend Policy System, Cookish says.

3Com users reacted to the development positively.

"It is exciting to have a policy system that can take advantage of our existing directory, eliminating the need to have several directories," says Gary Habermann, director of network operations at Widener University in Chester, Pa. "This greatly reduces the amount of maintenance and overhead associated with deploying policy-based networking."

3Com will still support Microsoft's Active Directory, and will interoperate with directories from Netscape and Siemens via Lightweight Directory Access Protocol.

"Directories are the future of network and policy management," Cookish says. ◪

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Internet start-ups strut their stuff

BY JEFF CARUSO

PALM SPRINGS, CALIF. — While the old guard of networking was struggling against heavy snow to get ComNct 2000 under way in Washington last week, a new wave of Internet start-ups was sunning itself in Palm Springs.

Here at the Showcase trade show, it was the Internet Gold Rush in action, and each company was putting on display its best ideas about how to make a buck on the Internet — "monetizing," they call it.

The companies know that a good name, one that connotes hipness and e-commerce, is important to get the venture capital they crave. So the exhibitors included 40 companies whose names ended in ".com." Another 10 had names beginning with a lowercase "e," and five started with a lowercase "i."

Dan Niemann is convinced the next hot letter is "z" — or perhaps "m," as in "mobile." He is director of marketing at Zimba. Niemann says "zimba" means "tool" in Greek, but mainly the company chose the name because it just sounded right.

"We were like, 'Hey, it's ''Netty,' it's got a 'z,'" Niemann says. Zimba makes mProductivity, a service for helping mobile workers keep in touch with fellow employees and make travel reservations.

Several companies demonstrated Web sites that help individuals and companies find services. Examples included HandShake.com and eFrenzy, which let users order services from all kinds of providers, such as movers, photographers and plumbers.

Services uniting phones with the Internet were also prevalent. AT&T Chief Technology Officer David Nagel said in his keynote address that AT&T plans to release a service later this year that will enable computers to read e-mail to users over the phone.

BeVocal showed a service that will let users call BeVocal on cell phones to get directions, and the company's computers will read aloud directions taken from MapQuest servers. Lipstream Networks showed a service to send voice over the Internet. Sites can subscribe to the service, and any voice traffic will be picked up by Lipstream and sent over Qwest's network.

There were also several gadgets on display (see graphic).

These companies know they have to move fast to keep up with their competitors. "Everything you knew four months ago is suspect," says Steve Larsen, CEO of Net Perceptions. His company makes software that looks for patterns in people's tastes and tailors sales to those tastes.

These companies also have to spend fast. It takes money to build a customer list and to distinguish a company from the market. "Our only limit is money," was a refrain overheard many times here.

One start-up, Netpliance, is banking on a Super Bowl advertisement to get the exposure the firm needs. The company brings together news, weather and other information for consumers, sells them a computer to view it on and acts as an ISP to bring it to them.

Netpliance wouldn't say how much it is spending on the ad, but those commercials don't come cheap.

Apparently, another big expenditure for these companies is merchandising. The conference tote-bag distributed at the start of the show was stuffed with items bearing company logos: four T-shirts, three baseball caps, eight pens, a yo-yo, four packs of mints, an alarm clock, a flashlight, a microphone, a stuffed octopus . . . you get the idea.

"What if all these companies' trinkets are better than their products?" asked Jeff Bonforte, CEO of i-drive.com.

His question, not ours. ◪

Showing off at Showcase

Companies exhibiting at Showcase introduced some products a bit off the beaten path. Examples:

Company	Product
LCI Technology Group	Pen that takes note of the way you sign your name. It measures the pressure applied, the time it takes to sign and other metrics. Although no two signatures from the same person are exactly identical, the company says the metrics remain similiar and hard to duplicate.
Netpulse	Stationary bicycle that lets you surf the Web while working out. Uses flat-panel, touch-screen monitor to let you navigate Web sites, watch TV, listen to CDs, check e-mail and see how many calories you're burning.
Xenote	Small, handheld device that lets you "bookmark the world." Point it at your radio and it figures out what frequency it's tuned to and notes the time. Later, take the information to Xenote's Web site and it will tell you what song was playing then and give you the chance to buy the CD.

More **breaking news**

Network World Fusion now has more news than ever. Check out these stories online:

Lotus to pull plug on cc:Mail

Lotus cc:Mail hasn't been all that chipper lately. The company has not done a major upgrade in eons, and Lotus has been begging, pleading and cajoling customers to switch to Notes. But none of that really worked, as cc:Mail loyalists stuck to their old software. So Lotus delivered a one-two punch. First, it made sure that cc:Mail flunked every Y2K test known to man. Second, the company plans to completely abandon cc:Mail this October. **DocFinder: 6638**

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NetFlash delivers network news to your e-mail inbox, every day, free of charge. And it includes occasional flashes of wit. Sign up today, sit back and let the news come to you.

DocFinder: 3850

Remote Alaskans to vote using Internet

In certain parts of Alaska, it can be pretty tough to make it to the polls, especially this time of year. So instead of hooking up the dog sled or gassing up the Ski-Doo, Alaskans participating in a Republican presidential straw poll can simply log on to the Web to vote. **DocFinder: 6639**

Late to ATM and IP parties, N.E.T. cuts its staff and regroups

You've got to feel bad for N.E.T. This company was one of the first to have ATM, but it dragged its feet. Then it just about missed the IP train. Now the company is cutting costs (laying off one-third of its workers was a good place to start), and going all out for IP. Unfortunately all its major competitors (little guys like Cisco) already have IP religion. **DocFinder: 6640**

www.nwfusion.com

Nortel buffs up Passport

New low-end access switch debuts at ComNet.

BY JIM DUFFY

WASHINGTON, D.C. — Enhancements to Nortel Networks' Passport line of WAN switches are intended to help users better support e-business and multiservice voice/data applications.

COMNET WASHINGTON D.C.

At ComNet 2000 here last week, Nortel rolled out a low-end addition to the Passport line as well as new software releases for the mid-range Passport 4400 and high-end 6400. The new offerings are designed to cost-effectively bring multiservice networking to small offices; add voice-over-IP support for larger offices; and improve transport of IP over ATM.

For small and midsize businesses and remote branches, Nortel unveiled the Passport 2430. The 2430 is priced at $1,400, which makes it slightly less expensive than competitor Cisco's 1600 router, which costs $1,495; and much less expensive than the Cisco 1700, which costs $2,195.

The Passport 2430 features an autosensing 10/100M bit/sec Ethernet LAN connection and two WAN adapter module slots. WAN modules include serial, ISDN Basic Rate Interface, V.34 modem, T-1 and fractional T-1, E-1 and fractional E-1, and an integral 56K bit/sec DSU/CSU.

The switch also runs Nortel's BayRS routing software, which features IP and the Open Shortest Path First (OSPF) network and routing protocols. It also supports data compression, traffic prioritization, and filtering and firewalling capabilities.

The Passport 2430 will be available Feb. 15.

New software for the Passport 4400, meanwhile, is called Release 4.0. It adds voice-over-IP support to the switch's existing voice-over- frame relay capability. The package also includes support for the OSPF routing protocol, enhanced IP traffic prioritization and a Web-based configuration tool for SNA devices.

The 4400's higher-end cousin, the Passport 6400, gets a new software release as well. Release 7.0 lets 6400 users improve IP/ATM interworking by mapping IP class of service to ATM quality of service. The software works with a two- and three-port OC-3 and DS-3 ATM module for the switch.

Release 7.0 also features the virtual router redundancy protocol for routing table backups; and improved performance of the Border Gateway Protocol 4 routing protocol used in service provider networks.

Release 4.0 of the Passport 4400 software and Release 7.0 of the Passport 6400 software come bundled with the purchase of the switches.

Nortel Networks: www.nortelnetworks.com

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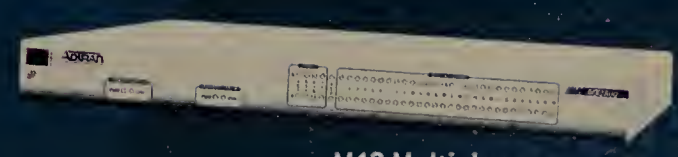

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Sun touts Solaris 8 as key to e-business

BY JOHN COX

NEW YORK — Sun staked out nothing less than the entire Internet as its playing field last week with the introduction of the Solaris 8 operating system. Executives used a New York kickoff event to argue that only Solaris offers what enterprises need to become Internet-based businesses.

"There is no such thing as a 'Unix market,'" claimed Ed Zander, Sun's president. "There is only a Solaris market."

Solaris 8 will be released March 5, hard on the heels of its chief rival, Microsoft Windows 2000, scheduled to ship Feb. 17. Sun officials used last week's event to highlight features of Solaris 8 they say Win 2000 will lack.

In one demonstration, an executive plugged in a new CPU board, adding two CPUs and more memory to a running Solaris 8 server. The application on the server paused momentarily, then restarted from where it had stopped.

"NT can't do this," said Anile Gadre, vice president of the Solaris division.

The combination of features and their packaging as part of the operating system are eagerly awaited by some. "It is vital to our e-commerce initiatives," says Bob Rudis, a senior consultant for e-business technology development at Johnson & Johnson in Raritan, N.J. "We are counting on the [Lightweight Directory Access Protocol] integration to tie a number of our services together. And we are confident that the 64-bit hardware/software combination will be unbeatable for shared, scalable, e-commerce servers."

Sun's Zander says as the Linux market matures, it will fracture. That can't happen with Solaris, he says.

Sun has replaced the former Solaris directory with the LDAP-compatible iPlanet Directory Server, from the Sun-Netscape Alliance. The directory is based on the former Netscape directory, which has been available for about two years. Directories hold information about users, including Web site visitors, and make it possible to tailor access to applications and data.

"It will help me provide authentication and authorization services in a global, open fashion," Rudis says. There are other improvements that make it easier to manage and deploy Solaris servers and their applications, he adds.

In another change, Sun announced it is going to give away the Solaris source code for free. Only if users make additions to the code with the intention of selling products for profit will Sun require payment. Sun will make money from Solaris licensing to OEMs such as NCR and Fujitsu, and from selling support and consulting services.

Gadre said the goal is to spur innovation in Solaris by Unix developers worldwide and to make it easier for the operating system to be used in new projects.

Several users, who requested anonymity, are unimpressed by the move. One describes it as a "lame open source announcement." Another, who prefers Linux, calls it an extension of Sun's early Java community licensing program, which he says is "failing miserably."

Sun clearly is of two minds about Linux and the open source movement in general. "I still have reservations about Linux," Zander said. He predicted that as Linux matures, the market will fragment because there will be Linux versions that are different enough to require applications to be rewritten. That can't happen with Solaris, he said.

Solaris Vice President Gadre said Linux is a "huge friend" because it has made Unix, and by extension Solaris, exciting again to developers. But he said Linux lacks "rocket science" features that Internet business applications need, such as clustering and sophisticated systems administration. "Sun will be able to contribute this kind of expertise to Linux," he said. ◪

Here's to a faster Web site: the Compaq TaskSmart C-Series server.

Survey reveals keys to cheaper Win 2000 migration

BY JOHN FONTANA

Enterprise customers that have well-established procedures for managing their desktops should find moving to Windows 2000 less expensive and less complex than those that have not, according to a new study.

The study, released last week by The Meta Group consulting firm in Stamford, Conn., concludes that well-organized companies can trim up to $450 off the average per-desktop cost of upgrading to Win 2000 Professional, the desktop version of the operating system slated to ship next month.

"If enterprise users have refreshed their hardware every two to three years, the migration costs related to Win 2000 will be much less," says Kurt Schlegel, senior research analyst for The Meta Group.

The Meta Group predicts that the average cost of a Win 2000 upgrade will be $700 to $800 per desktop. But after certain factors are taken into consideration, those costs could drop to as low as $250 or go as high as $1,800 per user.

The biggest issue that could inflate costs is how fast enterprises choose to replace aging PCs that can't handle Win 2000's requirements, and how many machines they need to replace.

The Professional version runs best on a 300-MHz Pentium II machine with a minimum of 128M bytes of RAM, according to The Meta Group. Microsoft's systems requirements, however, are much lower: Pentium-compatible, 133-MHz machines with 64M bytes of RAM are enough, according to the company.

"We don't think hardware will be a big cost for us because most of our machines are less than 3 years old," says John Masseria, manager of systems support for Carnival Cruise Lines. Carnival, which keeps a close management eye on its desktops, says nearly 75% of its machines are based on 166-MHz Pentium processors, and roughly two-thirds of its machines have at least 128M bytes of RAM.

The Meta Group's Schlegel says cost benefits also are likely for users that have established and maintained standard desktops, given that they know what to expect on each desktop during the migration process.

J.D. Edwards hopes its diligence to desktop standards will pay off as the company begins a 10-month migration to Win 2000 on nearly 8,500 desktops and laptops. The Denver-based member of Microsoft's Joint Development Program maintains two unique desktop configurations, one for staff and one for developers.

"We are still in the process of determining our costs, but we do have a budget for deployment and are managing to hit those numbers," says Tricia Fezler, manager of IT communications. She feels the standard desktops will help control costs.

Overall, The Meta Group concludes that Win 2000 Professional is very stable and users should be able to deploy it with confidence beginning in June.

"Unfortunately, it's a different story with the server," Schlegel says. "A lot of the benefit is with IntelliMirror and Active Directory, but it's also where there is a lot of complexity." The Meta Group, like many other consulting firms, is predicting Win 2000 server deployments won't hit critical mass until next year.

Windows NT
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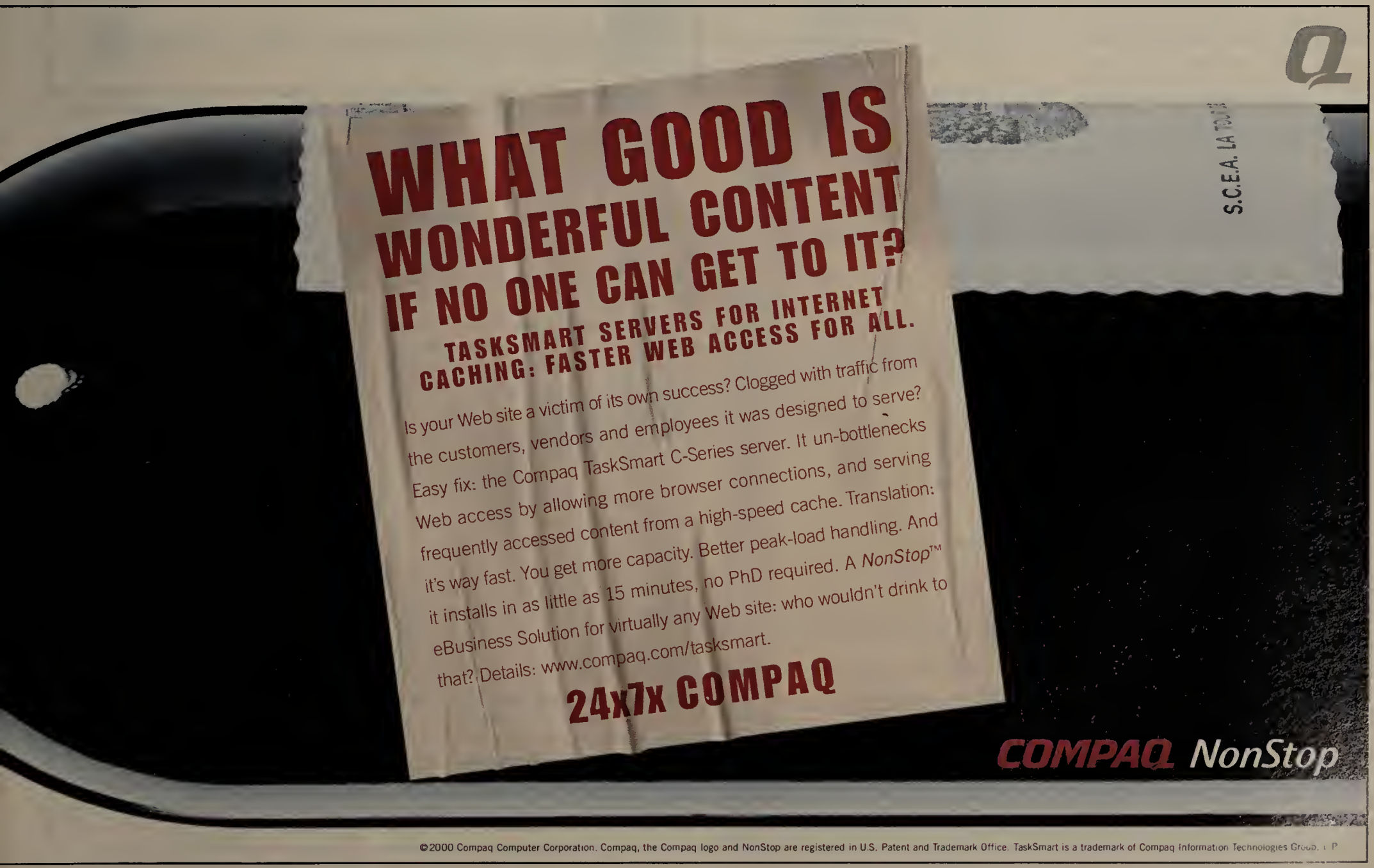


Companies offer 'click-to-talk' Web services

Application service providers AudioTalk and eFusion try to ease 'Net-based customer service.

BY DENISE PAPPALARDO

If the idea of adding voice capabilities to your e-commerce Web site sounds too complicated, you might want to check out what AudioTalk Networks and eFusion have to offer.

The companies are application service providers (ASP) offering business users an easy way to let consumers talk to customer service agents over the Internet.

"There are plenty of companies out there offering users Web-enabled tools that support voice or chat applications," says Brian Strachman, an industry analyst at Cahners InStat Group in Newton, Mass. "But the competitive advantage the ASP model offers is that users can simply buy this capability as a service, which is much cheaper than going out and buying the equipment themselves."

Service for rent

AudioTalk last week launched its Internet Voice Services, which let business users offer click-to-talk voice services on e-commerce Web sites. AudioTalk is offering its voice applications on a rental basis. Business users simply need to add a small amount of HTML code to their Web sites and an icon.

AboveNet is hosting AudioTalk's application, which runs on Linux servers and voice-over-IP gateways from Cisco (see graphic).

This week, eFusion is launching its Push-to-Talk service, which is a significant change for the company. EFusion is transitioning into an ASP from its previous position as a voice-over-IP manufacturer that sold gateways to service providers such as US West.

While eFusion has been offering voice-over-IP gateways for a couple of years, US West is the largest domestic customer eFusion has announced. The company believes that by eliminating deployment and network integration concerns, more business users will be willing to add voice capabilities directly to their Web sites.

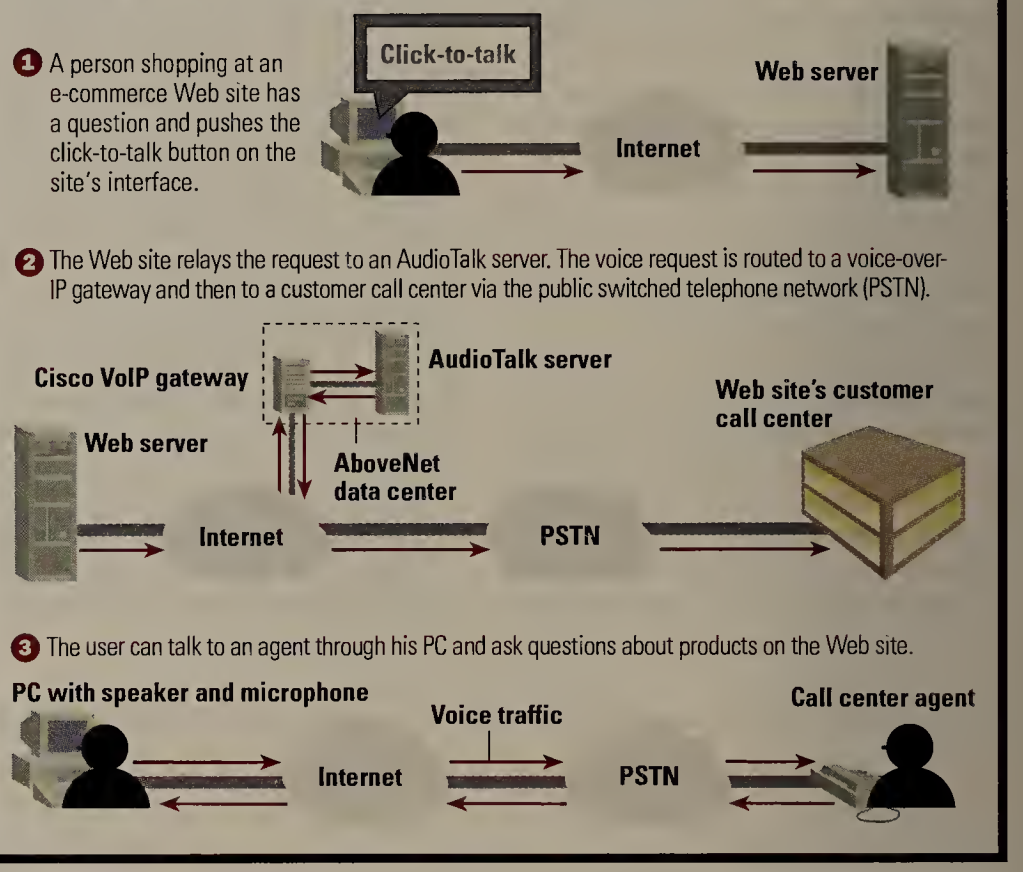
EFusion has deployed its servers, which have an integrated voice-over-IP gateway, at Frontier Global Center's Web hosting facilities.

AudioTalk's services are available now and start at $200 per month. EFusion's services are also available starting at $100 per month.

AudioTalk: www.audiotalk.com; EFusion: www.efusion.com

AudioTalk launches ASP voice services

AudioTalk servers include voice conferencing, interactive Webcast, streaming voice and a click-to-talk Web site feature, illustrated below.



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Names,
continued from page 6

alphabet name to register a .nu name.

Per-Anders Hurtigh, CEO of domain-info.com, says the company has sold only a handful of the Swedish language names so far.

"The problem is those domain names can't even be used throughout Sweden," he explains. "The domains don't work in all browsers, and many service providers do not support them in their DNS. Which means that there is not a very big demand for those names — yet."

Meanwhile, a Menlo Park, Calif., company named i-DNS.net International, Inc. has established itself as a registry for local language domain names. So far, i-DNS.net has lined up six ISPs in Singapore, Taiwan and Hong Kong to sell Chinese names. i-DNS.net is a spinoff of a test-bed project run by the National University of Singapore to explore internationalized domain names. The test bed, which involved eight Asian countries, was completed in December 1999, and a venture-funded start-up was created shortly thereafter to commercialize the underlying technology.

The i-DNS.net approach is based on Unicode, an ISO standard that maps foreign language characters to 1s and 0s. The i-DNS.net technology accepts a name in a local language, converts it to ASCII for transmission over the 'Net, and changes it back to the local language for end users.

The i-DNS.net approach creates a parallel universe for local language names, says S. Subbiah, director of the test bed.

"A lot of care was taken to ensure that the technology was not something that would break the DNS," he says. "It works within the framework of the existing Internet." ◪

Corrections

The chart accompanying a recent story (*NW*, Jan. 24, page 16) inaccurately depicted the relationship between Lucent and Chromatis. Lucent has invested an undisclosed amount of money in Chromatis, which makes optical access gear.

Our recent NOS review (*NW*, Jan. 24, page 71) should have stated that SCO UnixWare came in third in our Long TCP network test and that SCO UnixWare offers a multithreaded stack. We also neglected to mention that Red Hat Linux ships with a Web-based configuration tool, called swat, for managing the Samba file system.

If anyone asks, Cidera is the Greek God of Content Delivery.

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ComNet,
continued from page 1

scratched due to executives stymied by the bad weather.

Still, the show went on. New products and services were introduced at a blizzard pace by the likes of Cisco and Nortel Networks, both of which gave sneak peeks at unannounced enterprise network gear in their booths. Also on display were the latest in voice-over-IP wares, virtual private network products and services, as well as new optical switching technology from established companies and start-ups.

Keynoter John Roth, Nortel's CEO, was able to kick off the conference with a speech about the future of fiber-optic networks, and Novell CEO Eric Schmidt braved the elements in a private jet to keep his speaking engagement.

And attendees who braved the elements and slogged through the 20 inches of snow were treated like royalty on the show floor.

"This lets me spend time with the vendors," said Mike Hallman, a network administrator at international law firm LeBoeuf, Lamb, Greene & MacRae in New York.

Hallman, who sampled the network operating system test results at *Network World's* NOS Showdown Lab, said he is looking to move from NetWare 4.1 to 5.1. He likes Red Hat Linux, especially its low cost, but hasn't installed it because there aren't enough applications. As for Windows 2000 and Active Directory, Hallman says the Microsoft technologies aren't in his short-term plans. "Microsoft is trying to take a product that wasn't meant for directories and make it fit. There's just too much code," he said.

Novell CEO Eric Schmidt last week did what many executives couldn't — he made it to the show.

Damage control

Many of the 450 exhibitors were busy estimating how much the inclement weather damaged their business goals at the show. A similar exercise was conducted by many at the industry's last big show — NetWorld+Interop 99 in Atlanta — which was hurt by a hurricane that swept across the East Coast.

At the Molex booth, the scene was grim. A representative for the fiber-optic connector manufacturer said the company usually gets 300 good leads from ComNet traffic. "We're not going to have a good turnout this time, though," she said.

Dennis Mick, business communications manager for 3M, said the company was counting on the show to make a splash with its Volition fiber product line. "It's an important show for us," he said. "We've got a large space here and 25 team members. Low attendance hurts." Mick said his company counts on ComNet for military and government customer leads.

Even if attendees did get to the show, there was not always something for them to see.

Equipment from more than a few companies never made it to Washington. But in the case of one firm — Computing Edge — the stuffed owl tchotchkes did. So company executives were forced to give away stuffed birds from an empty booth. The Internet Society booth was unmanned for a good portion of the show.

Real stuff

The blizzard, however, did not stop Cisco from quietly demonstrating some unannounced products in its booth.

The company had a 12-port 1000Base-TX copper Gigabit Ethernet module tucked inside its new Catalyst 4006 switch. The module, which is expected to ship in April, also features two Gigabit Interface Converter uplinks. Cisco has not yet determined pricing for the module.

Cisco also displayed a lower-end version of its Media Convergence Server (MCS), a key component of the company's voice, video and data convergence strategy. The MCS 7820 is a Compaq server running Cisco's Call Manager 2.4 call-processing software. It does not, however, have the unified messaging or redundancy features of the higher-end MCS 7830 call-processing server. The MCS 7820 costs $8,000 and is shipping now, Cisco says.

In the Nortel booth, the firm was demonstrating a couple of unidentified modules from its Accelar 8600 Layer 3 data center switch, shipment of which has been delayed until the end of March. The switch was expected to ship last November. Nortel just started beta-testing the Accelar 8600 after a lengthy alpha testing period.

After the weather at this show, many attendees were ready for a lengthy period of hibernation.◪

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Reporter's Notebook

COMNET 2000

The lighter side

ComNet 2000 was dominated by the weather . . . if the snow wasn't falling on your head or you weren't butt-first down in a snow bank, then it dominated all forms of conversation throughout the convention center. Aside from the havoc the blizzard wreaked on the show (see story, page 1), the storm provided us with these items:

- From all accounts there was a pretty good snowball fight in front of the Convention Center on Tuesday night around midnight. We couldn't confirm whether the battle involved Microsoft employees bombarding government lawyers.
- The snow caused many local watering holes to close early — much to the chagrin of certain show-goers.
- Anyone who wanted to venture across town in a cab during the height of the storm had another gripe besides the inconvenience of the weather: Taxi drivers were charging double the regular fare for serving hazardous duty. Their inexperience driving in snow as well as D.C.'s minimalist street-clearing effort made for wild rides.
- The snowstorm updates showing on CNN kiosks sprinkled throughout the convention center were more crowded than many booths on the show floor.
- Lucent couldn't keep up with demand for its most popular offering at the show: No, not the latest in switch technology, but rather a gray fleece pullover that looked mighty warm to folks venturing outside onto the wind-swept streets.

On the exhibition floor

The hands-down best show within the show belonged to Alcatel — though a magician from Alteon was highly popular as well. (In fact, a little cat fight between the two firms occurred Tuesday afternoon. That resulted in Alteon being forced to move its magic show inside the company's booth — largely because its crowds were infringing on Alcatel's, or so the story goes). Pettiness aside, the Alcatel show featured dance and physical performances most folks only dream of.

Back at the Alteon booth, the magician was more than he appeared — in fact he was an Alteon stockholder, or so he claimed. Joel "The Ultimate Infotainer" Bauer (left) said he was trained in cognitive dissonance and slight-of-mind techniques, and had a Ph.D. in psychology. No word on whether any of that translated into new sales for Alteon.

You get what you pay for

Presidential candidates aren't the only ones ignoring campaign finance reform; Cisco is, too. The company slipped a phony dollar bill under the hotel room door of each ComNet attendee at the local Grand Hyatt and Ramada Renaissance soliciting votes in the Best New Product election. Each bill had a note written on it: "Be sure to vote for Cisco Systems." A dollar isn't much to pay for a vote to begin with, but these weren't even real dollar bills. Then Cisco really hit below the belt, or actually right at it: The company passed out Nestle candy bars with "Vote for Cisco" solicitations written on the wrappers. It paid off. Cisco's MGX8260 won best of show.

Have a nosh and a call

If there's anything reporters like better than free food, it's a live demonstration that could fail at any given moment. TollBridge delivered, at least partially. TollBridge supplied the press room at ComNet 2000 with telephones that relied on the company's voice-over-DSL technology. The phones worked just fine — eventually. Wednesday Bell Atlantic finally hooked up the T-1 line needed to connect the phones to the public phone network. TollBridge covered its bases through — it had free food, too.

— Network World staff

PHOTOS THIS PAGE: STAN BAROUH

Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

With an increasing number of wireless IP devices coming on the market, **ObjectSwitch** in San Rafael, Calif., this week announced a Wireless Application Protocol (WAP) Adapter for its ObjectSpace 3 application server platform.

Designed for large corporations and service providers, the adapter helps network-based applications modeled and generated with unified modeling language tools perform more efficiently.

The WAP adapter has built-in logic that eliminates extraneous material, such as background images on a Web page, that could cause difficulty for a WAP device's limited interface.

By adding the WAP adapter, customers can send information to and receive transactions from any WAP-enabled device, based on existing business rules.

The WAP Adapter is scheduled to ship at the end of February. Pricing for the adapter starts at $50,000.

ObjectSwitch: www.objectswitch.com

Adtran last week unveiled the Atlas 550 access device. The new box supports voice switching, time-division multiplexer (TDM) access and packet switching.

The Atlas 550 converges voice, data, video and Internet traffic onto one or two T-1 lines and supports frame relay, traditional TDM or hybrid networks.

The device is aimed at small to midsize businesses.

The 550 is a lower-capacity six-slot version of Adtran's 800Plus device — an eight-slot access box that supports voice, data and video applications at up to T-3 speeds.

The Atlas 550 is slated to ship in February and is priced starting at $2,995.

Adtran: www.adtran.com

Net Engines revs up 'Net access gear

BY DENI CONNOR

Network Engines' new Web appliances promise to make it easier for IT professionals to manage and control Internet traffic and e-commerce activities.

The company last week announced the release of the WebEngine Roadster, Viper, CommerceEngine and AdminEngine, Internet devices that speed and authenticate access to Internet activities. The boxes are aimed at midsize to large companies running Windows NT or Linux server-based networks.

Network Engines is looking to further tap into the appliance server market, which will exceed $7.9 billion by 2003, according to International Data Corp. in Framingham, Mass. Appliance servers are single-function turnkey devices that are easy to install and configure. Other functions that are ideal for appliance servers include file storage, data serving, security and messaging.

The WebEngine Roadsters are available as entry-level appliances for Microsoft Internet Information Server (IIS) or Linux Apache-based Web servers. Each box is designed for midsize companies running their own Web-hosting services. The devices ship with Web publishing, e-mail, file transfer services and Microsoft FrontPage server extensions for Web site development.

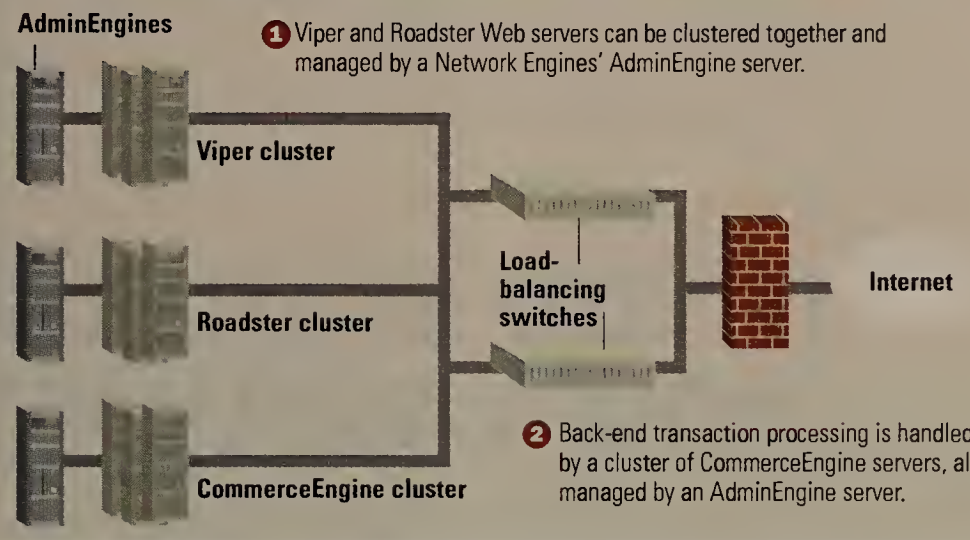
The Roadster Web appliances are based on Intel 330-MHz to 500-MHz Celeron processors with 64M to 512M bytes of memory, dual 10/100 Ethernet adapters and up to 36G bytes of internal 10,000-rpm storage.

The company also introduced new

See **Network Engines**, page 23

High-availability Web server clustering

E-commerce sites using Network Engines' Web servers and commerce engine servers can set up clusters of up to 255 machines for improved availability.



NetManage aims to bring legacy apps to the Web

BY MARC SONGINI

CUPERTINO, CALIF. — Software vendor NetManage is expanding its product line into Internet country.

The company last week rolled out software that will let SNA users convert 3270 and 5250 and other legacy applications into Web-based formats such as HTML, ready for business-to-business Web communications or to establish online storefronts. NetManage claims these products, called the OnWeb eBusiness Product Portfolio, should decrease the time it takes a company to get legacy applications.

Web-to-host connectivity tools from NetManage and others are designed to remove most of the drudgery from host access execution by obviating the need to connect each client to an SNA gateway. Users simply connect to the Web server via a browser and access applications over the Internet.

NetManage, like IBM, Eicon Technology, OpenConnect Systems and other competitors, is trying to come out with a comprehensive legacy-to-Web package that will wow customers and let them easily migrate legacy applications to the Web world, says analyst Darcy Fowkes of Aberdeen Group in Boston.

The NetManage portfolio consists of three software components that run on Windows NT and Unix servers now and will run on Windows 2000 in the future. The first is the flagship OnWeb eBusiness Integrator package, which will let customers take existing mainframe, AS/400, VAX and Unix host applications and convert them to HTML or XML for access by any user with a browser. Multiple back-end host applications can be integrated at once via this package.

A second package, OnWeb eBusiness Designer tool kit, has a simple drag-and-drop graphical user interface that lets users rewrite existing legacy SNA or Unix business logic for Web use.

The next component is the OnWeb ePublisher, which will let users take traditional legacy 3270 and 5250 green-screen applications and convert them to a Web format, while keeping many of the attributes of the original host. This "screen scraping" application is aimed at users with a single host and who are interested in providing quick-and-dirty Windows access to legacy applications. The ePublisher runs on Windows NT and Windows 2000.

Also included in the portfolio is the OnWeb eBusiness Development Kit, which lets customers craft object-based applications with standard Java or Microsoft developer tools. With the Development Kit, IS managers can craft applications for groups of around 150 users, who log on to an intermediate server that can access data from up to four back-end hosts. The Development Kit runs on Windows NT and will run on Windows 2000, as well as Unix hosts.

The OnWeb eBusiness Product Portfolio will be available within the first half of this year. Pricing for the products has yet to be announced.

NetManage: www.netmanage.com

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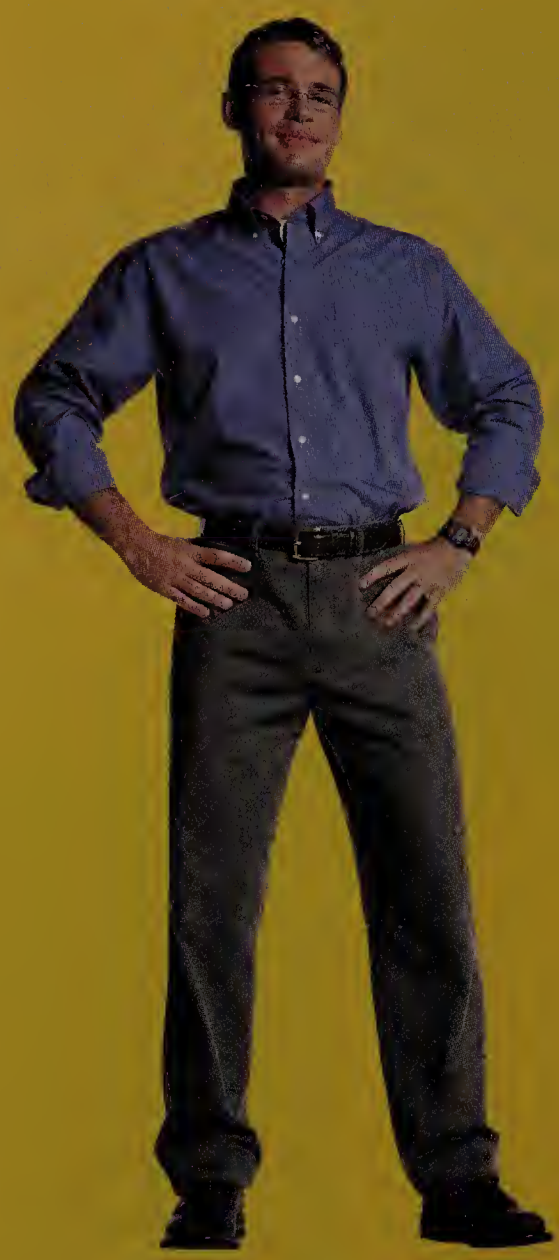

DEVELOP WEB APPS:
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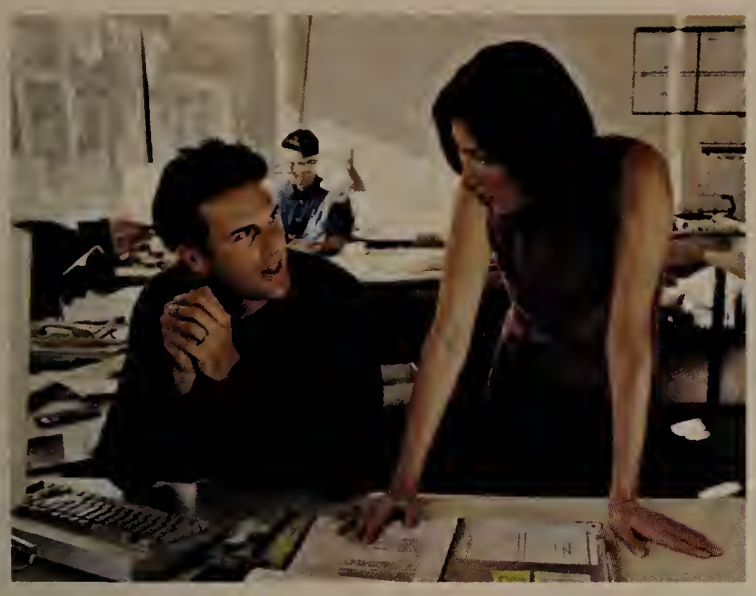

Windows 2000 is Web-to-the-core.

You've got major-league stuff here. The new Microsoft Windows 2000 operating system is at the foundation of Windows DNA. This new OS now has a complete application server to develop and run serious enterprise-level Web apps. Its built-in middleware includes component services (COM+), Transaction Services (MTS), Message Queue Services (MSMQ), Internet Information Services (IIS), and an integrated XML parser. All members of the Windows DNA team work well together, including SQL Server™ 7.0, SNA Server 4.0, Site Server Commerce Edition 3.0, and Visual Studio.

Develop the apps you need for the Business Internet right now.

This is a five-alarm fire. They want Web apps. Everything from supply chain integration to sales tracking. And they want them yesterday. Good thing you're ready. With Windows® DNA, your experience with Microsoft® Windows and the Visual Studio® 6.0 development system has prepared you to develop those big, killer, Web apps faster than with any other platform. Using the skills you already have, you're well on your way to meeting the demands of the Business Internet right now.

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Intel acquisitions fortify future network role

BY APRIL JACOBS

When Intel demonstrated its Bluetooth wireless products last month, the firm was doing more than showing off another leading-edge technology — it was once again bolstering its rapidly developing status as a major player for small, midsize and even enterprise business customers.

In the past five months, the chip giant has spent more than $2.15 billion to buy five companies, fortifying its virtual private network (VPN), IP telephony and network management technologies with acquisitions such as Ipivot's e-commerce management equipment, DSP Communication's wireless chipsets and software, and Parity's software for IP telephony applications.

Intel is also playing a larger role in the network security arena. Most recently, it announced a partnership that observers called significant with Check Point Software, one of the top five Internet security vendors worldwide, according to research firm International Data Corp. (IDC) estimates.

Intel's strategic partnerships and product offerings are helping it make a bigger mark on not only the PCs, workstations and servers its chips inhabit, but also the networks to which they are connected. The bottom line: Intel's business and technology strategies will drive demand for its high-end chips and help prevent commoditization for the company's other products, including network devices, say industry observers.

"Intel has a pretty good size network division, and it has a number of products that use various security functions to add value to those network products," says Abner Germanow, a senior analyst with IDC in Framingham, Mass. Germanow says Intel's strategy of incorporating high-level features into otherwise simple products is shrewd. The strategy allows the company to avoid falling prey to the normal price declines that affect those markets.

Additionally, he notes, Intel's contributions give the company power over areas it would otherwise not have access to, particularly with regard to security and e-commerce.

With agreements such as the one with Check Point, which will combine Check Point's Secure Virtual Network firewall software with Intel's IX programmable silicon architecture, Intel will in the future drive security into new specialized chips and chipsets for network products. The moves not only give Intel access to the network security market, but also more control over it.

Beyond network security, Intel announced the following network-related products since August 1999:

- A toolset for simplifying deployment of VPN clients.
- Software for managing and integrating remote access users.
- A fast Ethernet controller for embedded applications.
- A line of products to help companies develop security for their networks.
- A manageable switch product.

Intel also announced it would combine its IX technology with Nortel's OpenIP software for network device design.

From Intel's point of view, its expanding role in the network and network security market is a natural progression.

Len Rand, Intel's general manager for IX Architecture operations, says that as networked PCs continue to grow in importance, so will network equipment for Intel. Rand says Internet-related technology, particularly e-commerce, will be a focus for Intel over the coming year as the company rolls out new technologies. Just recently, Intel teamed with RealNetworks to simplify content streaming for business presentations.

That kind of diversification will help Intel ensure stability in a market where companies' products can quickly become obsolete, or cheap commodities, observers say.

"Intel not only is playing in the performance game of making faster, cheaper and better chips, it is also adding value around those chips to ensure its long-term success as a company," says John Dunkle, president of Workgroup Strategic Services, in Portsmouth, N.H. Dunkle points to manageability and standards initiatives, as well as acquisitions that Intel has made over the past year, as good examples. The Dialogic acquisition, for instance, was not only a boost to Intel's technology holdings, but also a step forward in its effort to promote computer telephony. For end users, that should mean more integrated capabilities on the desktop.

Intel's expanding role should help users in the long run, says Dunkle, who views the company's work to integrate its technology with industry leaders as an avenue to better products.

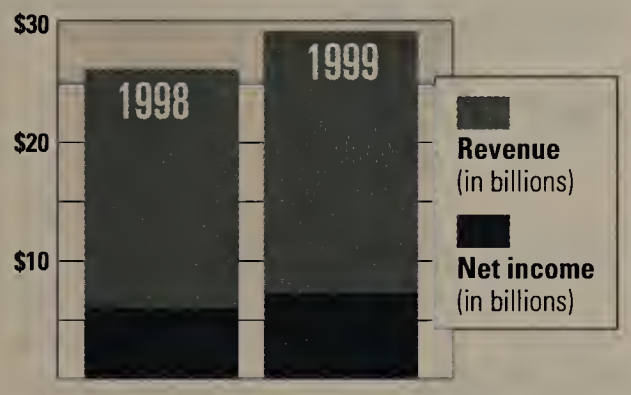
One challenge Intel may need to address in the coming year is that end users don't yet recognize the company as significant beyond the chip arena, probably because the technology is often embedded. In the small to midsize business market, the consequences may be less harmful than in the enterprise market, where brand name counts.

"When I think of networks, I don't think of Intel," says Jim Prevo, chief information officer at Green Mountain Coffee in Waterbury, Vt. "And that's probably because we tend to look at the market as byproducts — we used to buy network cards, but now they are embedded on the desktop."

As for the coming year, Intel plans to deliver more programmable silicon that will make its way onto and into everything from carrier-class cable concentrators to high-end routers and ATM switches, says Mark Christensen, vice president and general manager of Intel's network communications group. "We want to make the PC and server architecture ready for the next generation of applications, and that increasingly has to do with e-business," he says.

Intel rolls along

Intel ended its fiscal year stronger than the year before. The company's stock has surged 20 points over the last seven months.



Network Engines,
continued from page 17

hardware and software capability for its Viper LX and NT high-end Web servers. Viper Web servers operate in Windows NT and Linux environments and feature single or dual 500-MHz to 700-MHz Intel Pentium III processors with 128M to 2G bytes of RAM. They run Apache or IIS Web server software.

Each Viper Web server is rack-mounted and can be clustered in up to 255-node configurations. All WebEngine appliances are rack-mountable, and up to 23 devices will fit in a standard rack.

"We use 23 WebEngines for Linux in a standard rack to capture newsfeeds and as Web servers because they are low-profile," says Joe Choti, chief technology officer for Screaming Media in New York. "We are hosted at a co-location cage at Global Frontier, where price is a premium for space. We would need to double or triple our cage size to put in that many other units." Network Engine's WebEngine Roadster and Viper appliances are 1.75 inches high.

Further, Network Engines unveiled the CommerceEngine, a 600-MHz Pentium III-based server that encrypts and decrypts Secure Sockets Layer transactions. The CommerceEngine is commonly used in configurations with the Viper LX or NT in environments where a high level of processing is required.

Finally, the AdminEngine is a device for managing clusters of up to 256 Roadster, Viper or CommerceEngine appliances.

The Roadster LX is $2,000; the Roadster NT is $2,700. The devices will ship this quarter. The Viper appliance is $3,000 for Linux and $4,000 for Windows NT. The CommerceEngine, scheduled to ship in the second quarter, starts at $10,000. The AdminEngine starts at $5,000 and includes five appliance licenses.

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Wired Windows . Dave Kearns

MEET THE NEW BOSS, SAME AS THE OLD BOSS?

In a surprising move, Bill Gates, who has been Microsoft's only CEO, recently handed the title to Steve Ballmer, who has served as president since July 1998. Gates will remain chairman and become chief software architect. The new role, he said, will allow him to return to "what I love most — focusing on technologies for the future."

Does anyone really believe that installing Ballmer as CEO will actually change anything that happens in Redmond?

Ballmer has been president and chief operating officer for two years — essentially handling the day-to-day operations of the company and cnforcing policy as laid down by the Chairman of the Board — Gates. Simply making Ballmer CEO doesn't change that.

All major decisions will still be made by the Chairman of the Board, and that's still Gates. Even the much ballyhooed reorganization that Ballmer announced after his coronation was — you can be sure — signed off on by Gates.

It wasn't the business responsibilities of CEO Gates that kept him from "focusing on technologies for the future," but his constant gallivanting from trade shows to government offices and every media circus in between. How many prime ministers will clear their schedules for Ballmer, and how many will insist that only the richest man in the world can get their attention?

And if Gates wasn't "focusing on technologies for the future," who was? Can it be true that Microsoft was limping along from day to day, with no strategic vision? Could that be how this whole antitrust thing happened — no one in Redmond was aware of (never mind planning for) Microsoft becoming a monopoly in the operating system arena?

Make no mistake about it, there's only one reason for all the changes happening at Microsoft. They're all intended to make splitting up the company as difficult as possible in the hope that the Department of Justice will settle for a fine and an agreement to "go forth and sin no more." By the time Gates and Ballmer are finished, and Judge Jackson is ready to rule, Microsoft's applications and operating systems will be hopelessly intertwined.

The Justice Department should be thinking of injunctive relief before that can happen.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

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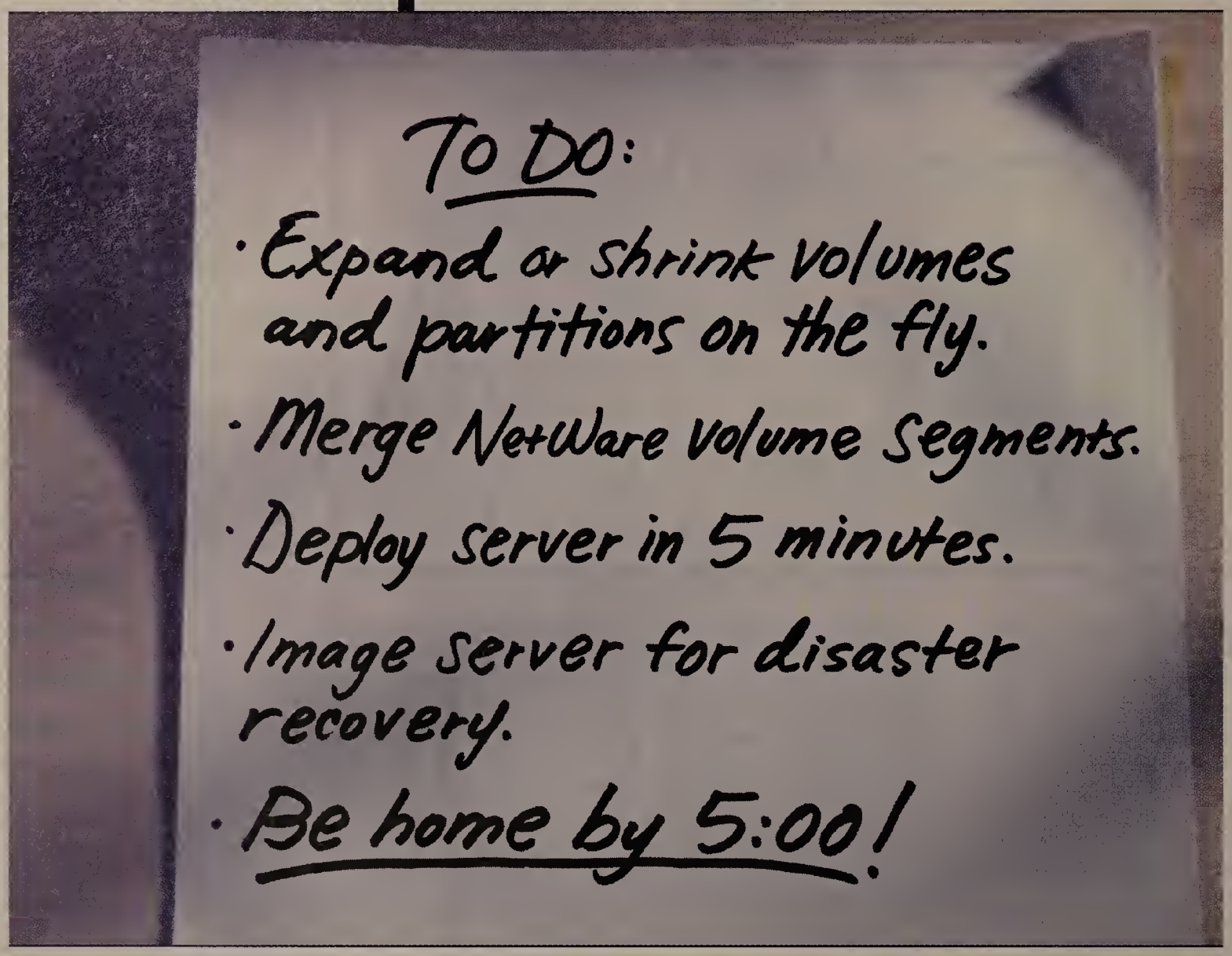

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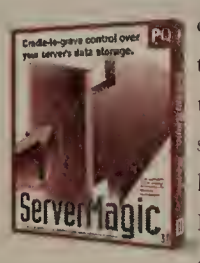

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Tip of The Week

Novell is firing broadsides at the upcoming launch of Active Directory within Windows 2000, and Microsoft is firing back. Watch the fur fly! Get Novell's view at www.novell.com/advantage/w2k.html then head over to www.microsoft.com/windows2000/news/bulletins/ for Microsoft's version. Weigh all the claims, then you decide who's telling the truth.

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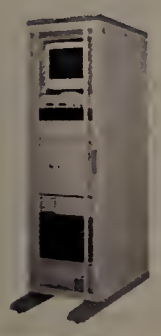

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Cisco's wireless moves: Not just a bunch of air

BY JIM DUFFY

WIRELESS NETWORKS

Mushrooming market for data has Internet equipment king investing heavily.

You know a technology is hot when Cisco starts throwing serious money at it. Because the company has spent about $2 billion to purchase wireless data companies in the past year, it's no stretch to say that wireless technology is the next sizzler.

And according to Cisco, the firm's recent investments couldn't have come at a better time as the wireless LAN market heats up, and user demand for high-speed access to corporate networks is at an all-time high.

"It looks like we timed wireless almost perfectly in terms of when we came to market and how much we bet," Cisco President and CEO John Chambers said in an interview with *Network World* last December.

To wit: Cisco last November announced plans to acquire wireless LAN vendor Aironet Wireless Communications for $799 million. Last February, Cisco and Motorola announced a $1 billion alliance to develop and deliver a framework for Internet-based wireless networks. Cisco and Motorola strengthened that alliance by jointly purchasing Bosch Telecom in Richardson, Texas, and forming a new company called SpectraPoint Wireless.

SpectraPoint Wireless will focus on delivering data, voice and video to businesses over a fixed "last-mile" wireless infrastructure.

In October, Cisco announced a partnership with 10 huge companies — including Motorola — to drive standards for broadband wireless Internet services. And in November, Cisco rolled out its first products based on those standards.

What's Cisco's motivation? The local multipoint distribution services (LMDS) broadband fixed-wireless market alone is expected to reach $2 billion-plus by 2003. LMDS is a last-mile technology that replaces the need for wired phone and cable lines.

"Broadband fixed wireless could pace DSL and cable" as the preferred broadband Internet access technology, says Mark Milazzo, Cisco's director of wireless market development.

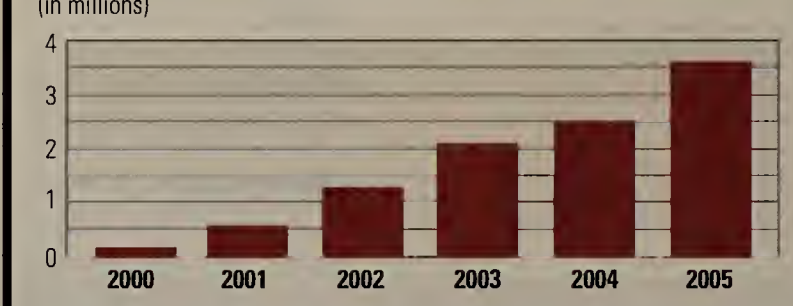
Wireless LAN connections are expected to be a $283 million market in 2003, up from $168 million in 1999, according to International Data Corp. (IDC), a market research firm in Framingham, Mass. IDC expects record shipments in traditional (retail, transportation and warehousing) and nontraditional (health care, education and home) markets over the next three years.

Wireless was always hot for voice, and more than 10 years ago it looked as if data could be a killer application for wireless. But back then, the market never really materialized.

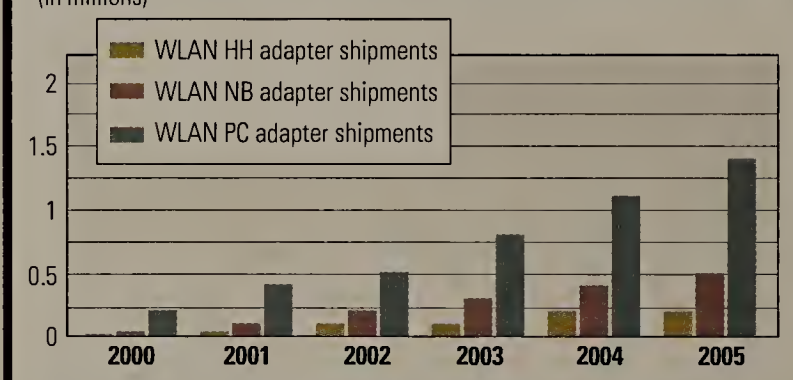
Wireless to make its way in the enterprise

Analysts predict strong growth in the markets for wireless network gear and wireless networked devices over the next several years, an indication that wireless LAN (WLAN) technologies are catching on in the enterprise.

Worldwide shipments of CPE for broadband wireless technologies
(in millions)



Worldwide shipments of WLAN-enabled handhelds, notebooks and PCs
(in millions)



SOURCE: ALLIED BUSINESS INTELLIGENCE, OYSTER BAY, N.Y.

So why would that market materialize now?

In mobile wireless, handsets are inexpensive, and competition is driving equipment suppliers and service providers to differentiate their offerings. Data is one way to do that, Milazzo says.

Access is also ubiquitous in the mobile world, he adds.

"In the whole rest of the world outside of the U.S., mobile is the preferred way to communicate," Milazzo says.

Fixed wireless provides cost-effective broadband connectivity without forcing customers to lease lines from a telco or lay new fiber. A single antenna is not only portable, but also can support up to eight T-1s, Milazzo says.

And in wireless LANs, an increase in speed from 2M bit/sec to 11M bit/sec and advances in the IEEE 802.11 standard have resurrected this once moribund market.

"For Cisco, it's a natural evolution simply because they built the wire-line market, and now much of the data that was moved over wire-line will be ported over to wireless as well," says Larry Swasey, vice president of communications research at Allied Business Intelligence (ABI) in Oyster Bay, N.Y. "We've already seen the movement among Internet content providers, wireless operators, and hardware and software manufacturers to decide upon standards that should be used. Within the next 10 years, we're going to see an increasingly high number of minutes — percentage of usage — on the wireless network for data."

ABI believes shipments of broadband wireless customer premises equipment and wireless LAN gear will steadily increase over the next five years (see graphic).

For broadband fixed wireless, Cisco is now shipping the WT2700 Wireless Technology Suite, a wireless WAN interface for the uBR7246 and uBR7223 Universal Broadband Routers. These products deliver two-way data, voice and video communications over the air to homes and businesses.

The WT2700 line is based on Vector Orthogonal Frequency Division Multiplexing (VOFDM) technology, which is optimized for use in congested city, suburban and rural environments. VOFDM overcomes line-of-sight, distance reach, subscriber coverage, installation and antenna size problems of existing proprietary wireless systems in the lower frequency microwave bands, Cisco claims.

On the wireless LAN front, the Aironet acquisition gives Cisco wireless adapter cards and "access points" that interface with wired infrastructures and manage wireless LAN traffic. Aironet also has wireless bridge products that provide point-to-point or point-to-multipoint connections among buildings.

Aironet's customers include some of the leading Fortune 500 companies — Dell, Ford, Hewlett-Packard, IBM, Microsoft and Sears.

ABI's Swasey says tens of millions of users worldwide will access the Internet this year using the Wireless Access Protocol (WAP). WAP is an emerging standard for using cellular phones and other wireless devices to access the Internet and advanced telephony services.

"Wireless will never carry as much data as wireline, but all carriers will have to offer these types of services due to the increasing mobility of the work force," Swasey says. "For Cisco, it just means 10 years of growth in this area. We've only seen the tip of the iceberg." ◩

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- **Bob Lesher and Charlie Bise,** Information Technology, Exel Logistics

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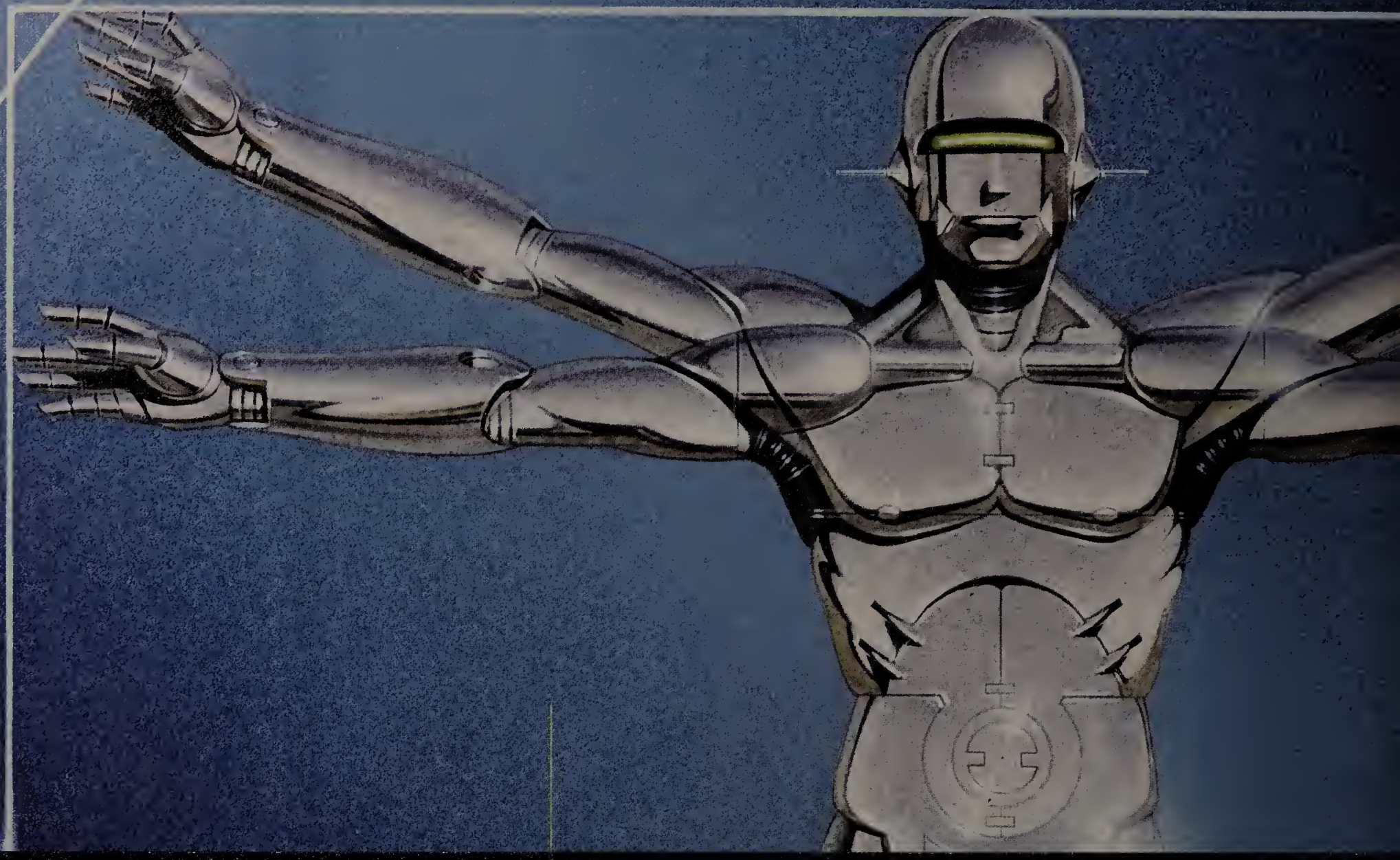

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Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

Finisar has introduced a switch for carriers designed to deliver services directly off optical networks. With the Opticity Service Provisioning Platform, service providers can support switched data services for Gigabit Ethernet and Fibre Channel over fiber rings or point-to-point connections, giving customers faster access at lower prices. An Ethernet speed link, for example, could cost as little as digital subscriber line, which is less than $1,000 per month.

Finisar: www.finisar.com

WorkNet Communications, a wireless Internet access service provider in St. Louis, is getting $21 million in fresh venture capital financing. The influx of cash will help WorkNet expand its wireless infrastructure. The company offers small and midsize business users its BitBeam service that supports wireless Internet access from 150K bit/sec up to 4M bit/sec. WorkNet offers BitBeam service in St. Louis, Indianapolis, Nashville, Dallas, Minneapolis, Cleveland, Memphis, Tenn., Kansas City, Mo., and Columbus, Ohio.

WorkNet: www.worknet.net

Corio, a Redwood City, Calif. application service provider, announced it is offering new e-commerce services based on **Commerce One's** software suite. Corio customers can now rent Commerce One's BuySite 6.0 procurement application coupled with the Commerce One MarketSite Global Trading Portal. Corio hosts these applications at its data centers, where business users can set up dedicated Internet, frame relay or private-line connections directly to their application and database servers.

Corio: www.corio.com.

Is there a catch within toll-cutting plan?

Carrier group wants access charges halved, but critics say it may mean more monthly fees for you.

BY DAVID ROHDE

WASHINGTON, D.C. — Users who are considering money-saving packet voice options but who'd rather lower their regular telephony rates if they could, may get more ammunition from an unusual coalition of six carriers.

The coalition — consisting of AT&T, Sprint and four big local exchange carriers — is asking the Federal Communications Commission to halve the per-minute charge local carriers impose on long-distance carriers to complete calls.

The flip side of the proposal? The six carriers say they want the FCC to "simplify" the myriad fixed monthly charges that appear on many bills. But critics of the proposal say the way such simplification would be achieved amounts to an increase in monthly charges. And they warn the FCC should only be considering proposals that reduce per-minute and monthly fixed charges.

The group with the new proposal dubs itself the Coalition for Affordable Local and Long Distance Service (CALLS). The carriers say they came up with their proposal partly because the growth of packet telephony threatens the nation's universal-service system, which among other things ensures that rural customers have affordable phone service.

Phone calls sent over the Internet or other carrier data networks aren't subject to "access charges" — the amount built into regular per-minute long-dis-

See **Tolls**, page 30

Could you grab these savings?

How access charges would change under the CALLS proposal:

Current average access charge:	**1.1** cents per minute
New access charge for Bells and GTE:	**0.55** cents per minute
New access charge for other large local carriers:	**0.65** cents per minute

Note: Charges apply to both ends of dial-up long-distance calls and are passed along by long-distance carriers to users. Actual end-user cost depends on each user's negotiated contract.

ADC repeater doubles distance of HDSL2 modem

More customers may be able to use the technology now that its reach is extended to 24,000 feet.

BY TIM GREENE

WASHINGTON, D.C. — ADC Telecommunications is doubling the distance its two-wire, high-bit-rate digital subscriber line technology ean reach, which will enable more customers to get HDSL2 services.

The company announced last week at ComNet 2000 a repeater for its Sonoplex HDSL2 customer gear and carrier switching-office equipment.

The repeater sits in the middle of a long line between HDSL2 modems and regenerates the dying HDSL2 signal, which peters out as lines lengthen. Without a repeater, customer sites must be within 12,000 feet of the switching office. The repeater pushes that distance to 24,000 feet.

That is key to customers interested in the T-1 replacement technology because a T-1 can also be repeated. HDSL2 must have the extended reach to compete, says Ron Westfall, an analyst with Current Analysis in Sterling, Va. He says customers and carriers should be attracted to HDSL2: customers because HDSL2 is virtually indistinguishable from T-1 service, and carriers because it requires just two wires compared to a T-1's four.

HDSL2 will also help make high-bandwidth dedicated services more available because it doesn't disrupt other services on nearby wires in carrier cables. Symmetric DSL (SDSL), a symmetric service like HDSL2 that operates at 768K bit/sec compared to HDSL2's 1.5M bit/sec, is disruptive to asymmetric DSL (ADSL), which operates at a top speed of 8M bit/sec. "So far disruption hasn't shown up as a problem because DSL has not reached critical deployment levels with multiple DSL services in the same cable," Westfall says.

ADC's new repeater for its Sonoplex HDSL2 gear doubles the technology's distance from 12,000 feet to 24,000 feet.

The ADC gear can be powered over the phone line that carries the service, so if the customer suffers a power failure, the HDSL2 service should still work, just as a regular phone keeps working when the electricity goes out.

To make its gear more attractive to carriers, ADC plans to participate in an interoperability forum at the University of New Hampshire. The goal is to produce HDSL2 modems made by different vendors working together on the same phone line.

Also chasing interoperability in New Hampshire, Adtran, Inc. says its HDSL2 gear, H2TU-C switching office gear and H2TU-R customer site equipment, have proven interoperable with a prototype HDSL2 modem built around chips made by Globespan. Adtran uses the Globespan chips.

Vendors say it is easier to develop interoperability among products that are based on the same chips.

ADC makes its HDSL2 gear with Level 1 chips, but plans to switch over to Globespan chips in its next product release, according to Sean Martin, ADC's vice president of marketing.

Wan Monitor . Daniel Briere and Christine Heckart

'LIFELINES' MATTER ON MORE THAN THAT TV SHOW

During the wildly popular TV game show "Who Wants to Be a Millionaire?" host Regis Philbin often asks contestants: "Would you like to use one of your lifelines?"

As watchers of that show know, one lifeline option is to phone a friend.

If you are a network manager considering the deployment of a converged network, you have probably already asked your service provider and equipment vendor if you can phone a friend, but what you really should be asking is: "Can I dial 9-1-1?"

The ability to call a number, such as an emergency number, even when the power in your building or telecom equipment (such as a PBX) is down, is called "lifeline service." Most take it for granted and assume phone service will always be there. What most network managers do not understand is that with a converged network that utilizes a data network and perhaps data equipment for voice service, you may not be getting lifeline service as part of the standard package.

This lifeline issue is present in almost all variations of convergence services: LAN-based equipment such as IP PBXs, voice-enabled routers, and media gateways; as well as converged access services such as voice over digital subscriber line, voice over cable and even some integrated access technologies using DS-1 lines.

So if you are thinking about deploying a converged network, consider these options for lifeline service. Just like the game show, you have three options:

Lifeline 1: You can decide not to subscribe to a lifeline service. Beware, however, that if an emergency occurs and employees cannot contact an emergency number, you will need to be a winner on "Who Wants to Be a Billionaire?" in order to pay off the lawsuits. Another variation on this option is simply to assume employees have access to a cellular phone, or you can provide one for such situations.

Lifeline 2: Subscribe to a separate traditional plain old telephone service (POTS) and dedicate a phone in the lobby as the emergency phone. This is rather easy and relatively inexpensive, but it really doesn't move you much closer to a converged network. If you are in a large building, you may need a different POTS line and phone for each floor.

Lifeline 3: You can (or soon will be able to) order some special services from your service provider that will address the lifeline issue across the converged access line. For now, assume this option is not available (or is very limited).

As convergence technology and services become more robust, the lifeline issue will likely disappear or lifeline features will become standard, as they are under most traditional business phone services.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

Tolls,
continued from page 29

tance tolls to compensate local carriers on the originating and terminating end of the call. Because those access charges help fund universal service, the more users who break away from the regular phone system, the less money available for universal service, the CALLS proposal says.

To prevent that from happening, CALLS wants the FCC to reduce the access charge to little more than a half a penny per minute so that it would barely affect any user's decision whether to use Internet telephony (see graphic, page 29). But in return, CALLS wants the FCC to authorize big carriers to raise $650 million more for universal service through another method other than per-minute charges.

Also part of the group's proposal: The FCC would combine two charges that appear on residential customers' bills — the Subscriber Line Charge (SLC) and the Presubscribed Interexchange Carrier Charge (PICC) — into one, but raise the legal cap on the combined charge to $7 per month. Most business customers would continue to have those charges assessed separately.

Some user advocates say that's a bogus deal. The SLC (which telecom insiders pronounce "slick") and PICC (or "pixie") don't conform to the government's usual rule that industry-mandated charges be based on marginal costs, not past capital investment, says Mark Cooper, research director of the Consumer Federation of America.

"We opposed all that stuff in the first place," Cooper says. "Why the hell should I bleed now [to support] something I opposed?" The FCC should especially reduce government fees on second residential phone lines into people's homes, Cooper says, claiming they cost phone companies less to install than the first lines.

Where will the money come from?

Another problem: the new $650 million in funding. The CALLS proposal doesn't specify where the money will come from. But CALLS attorney John Nakahata concedes it's possible that long-distance carriers will raise the percentage of universal-service surcharges on large business users — now already as high as 6.6% — to raise the money.

Still, Nakahata says consumer advocates are wrong when they insist that all types of universal-service funding — monthly surcharges and per-minute access fees — must drop.

"That view assumes that the costs of building the network are the same in every part of the country, and that's patently untrue," Nakahata says.

He gets support from one association of large business users, the Ad Hoc Telecommunications Users Committee. The consumer SLC and PICC charges are actually below cost compared to the percentage universal-service surcharges paid by businesses, said a letter to the FCC by Ad Hoc attorney James Blaszak.

"Perpetuation of the existing subsidized residential service rates is indefensible," Blaszak said.

But if the FCC adopts the CALLS proposal, Blaszak said, it should also simplify the business SLC and PICC charges, and restrict carriers from collecting the new $650 million via excessive user surcharges.

The FCC is expected to vote on the CALLS proposal by March. ◪

Sprint spells out terms of exit from Global One

BY MARY LISBETH D'AMICO, IDG NEWS SERVICE

Sprint last week detailed its agreement for disengaging itself from Global One, its international partnership with Deutsche Telekom and France Telecom.

For its share in the alliance, Sprint will receive $1.13 billion in cash from its partners and have $276 million in debt repaid, according to a statement from the carrier. The transaction should be completed within the next few months.

Sprint already said it would pull out of Global One, which delivers voice and data services to corporate customers, after its merger agreement with MCI WorldCom was announced in October. Part of the agreement is to verify that Sprint customers who now use Global One's international services have a smooth transition. The agreement calls for Global One to keep servicing these customers for at least another two years.

The agreement also releases Sprint from certain exclusivity and noncompete clauses with its Global One partners but bars it from offering services that compete with certain customer contracts for one year, Sprint said.

Deutsche Telekom and France Telecom have assumed sole responsibility for financing Global One, Sprint said. The two carriers, each of which owns 10% of Sprint, have also agreed to give up their rights as Class A shareholders and resign their seats on Sprint's board of directors. ◪

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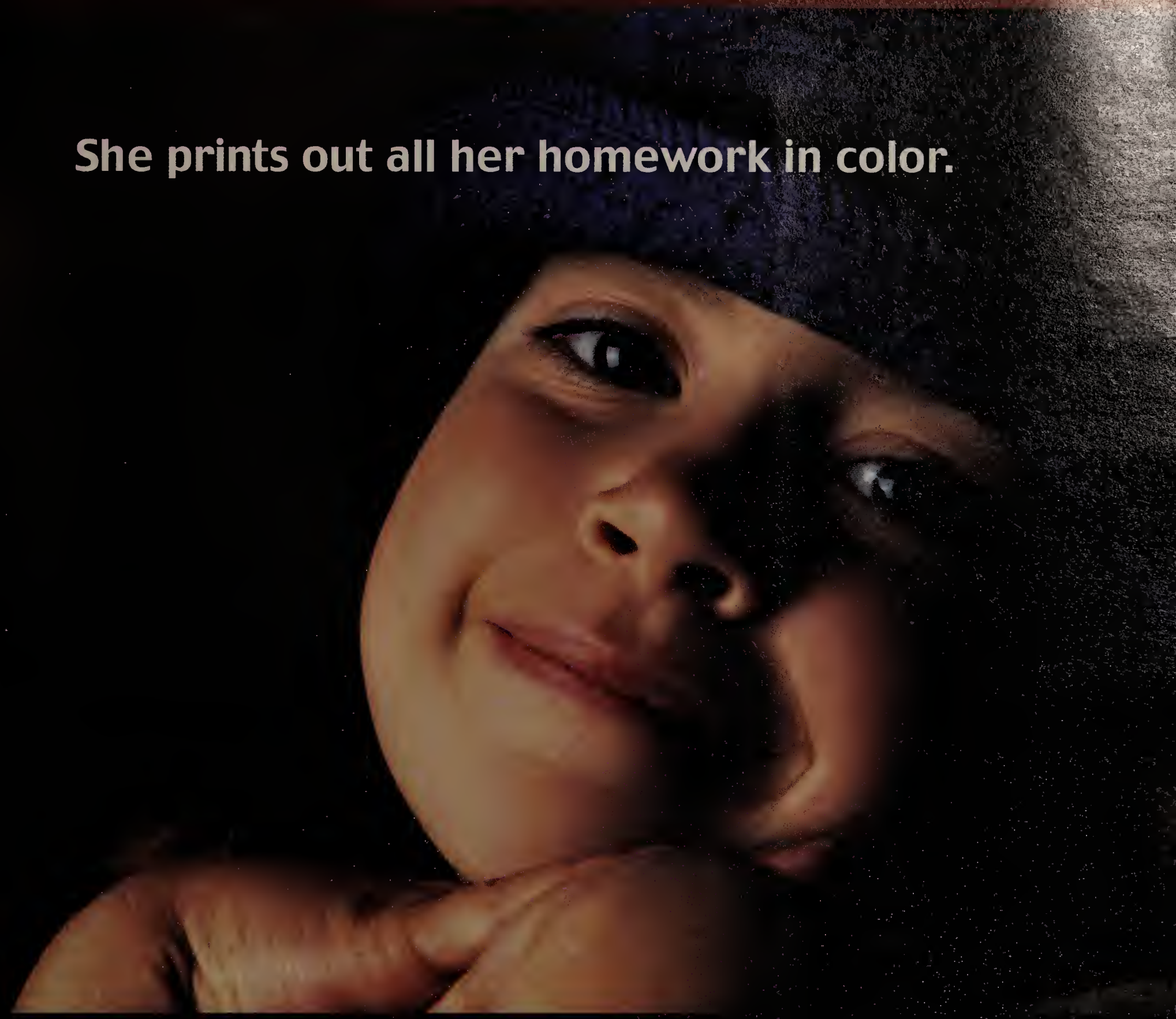

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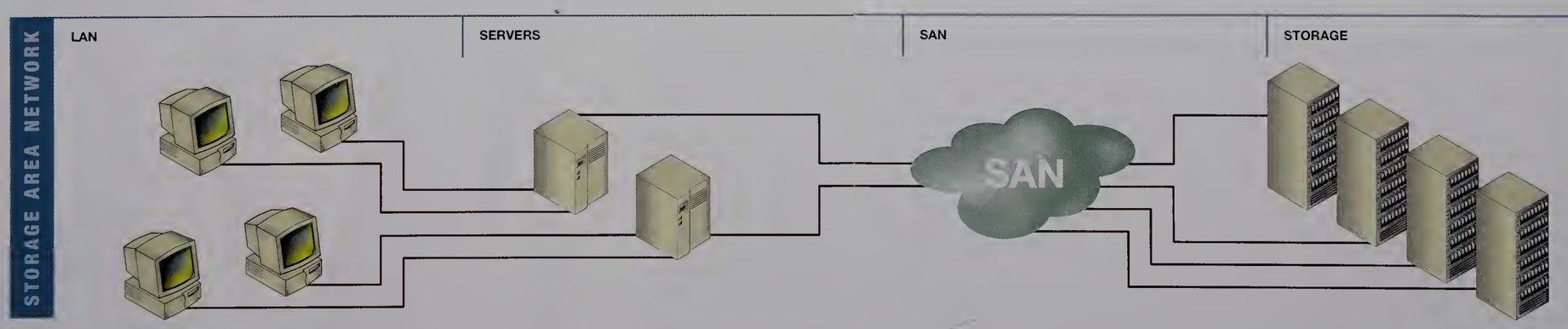

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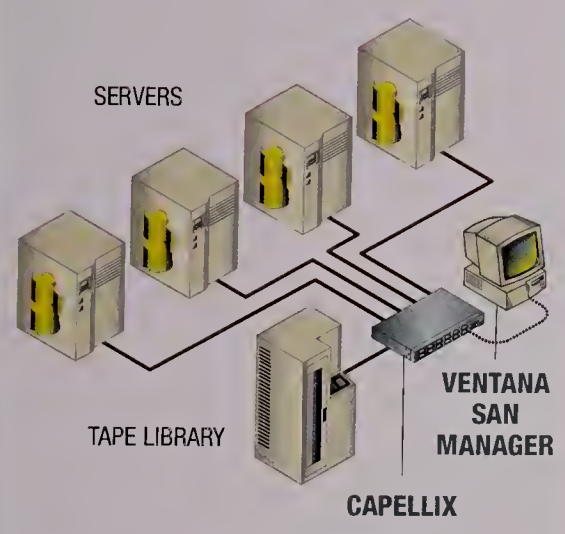

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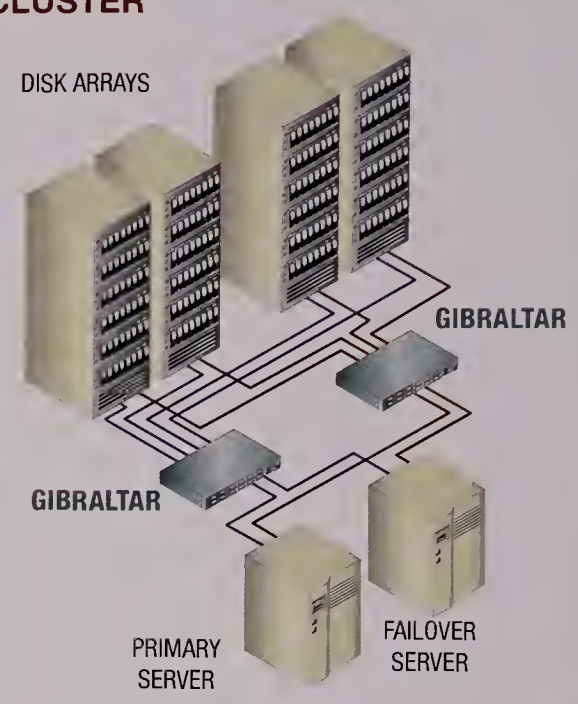
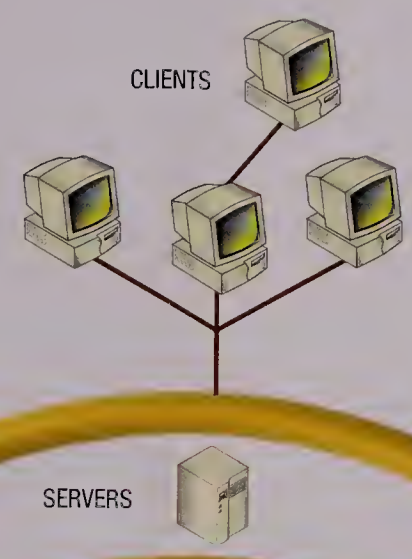
HIGH AVAILABILITY CLUSTER

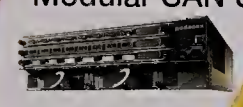


Redundant SANs Provide Continuous Access to Data



SAN

Capellix 3000
Modular SAN Switch

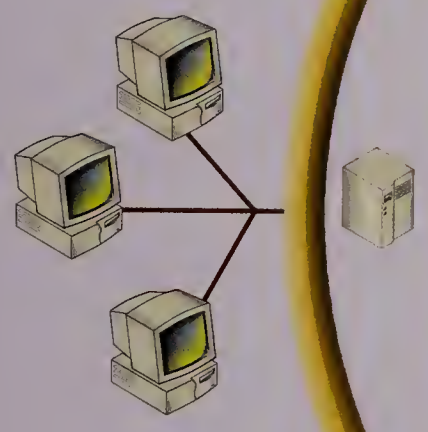


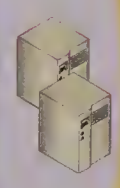
Gibraltar
Managed SAN Hub

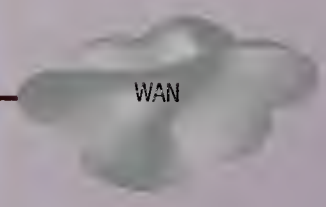
Capellix 2000
Stackable SAN Switch

gadzoox

Ventana SAN Manager
and SANtools



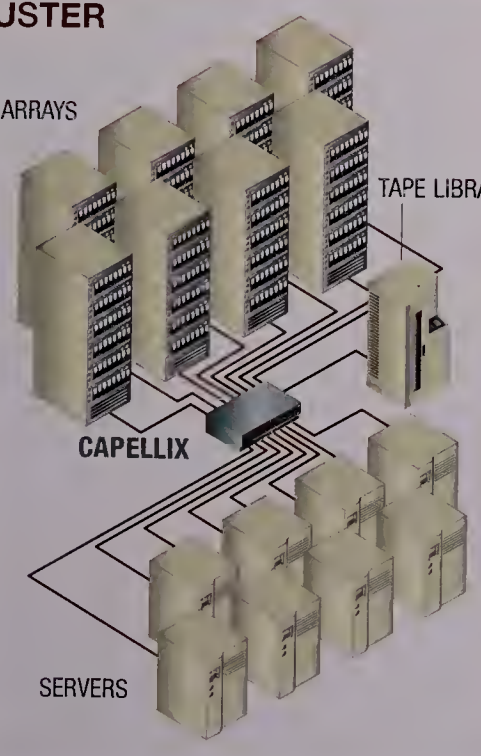


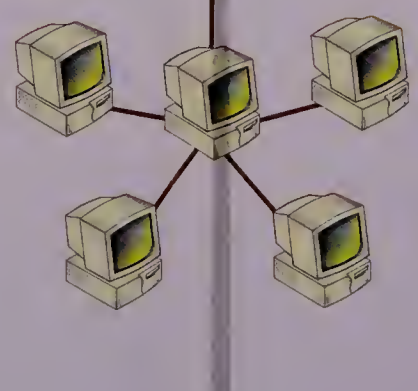


SANs Accelerate High Performance Clusters

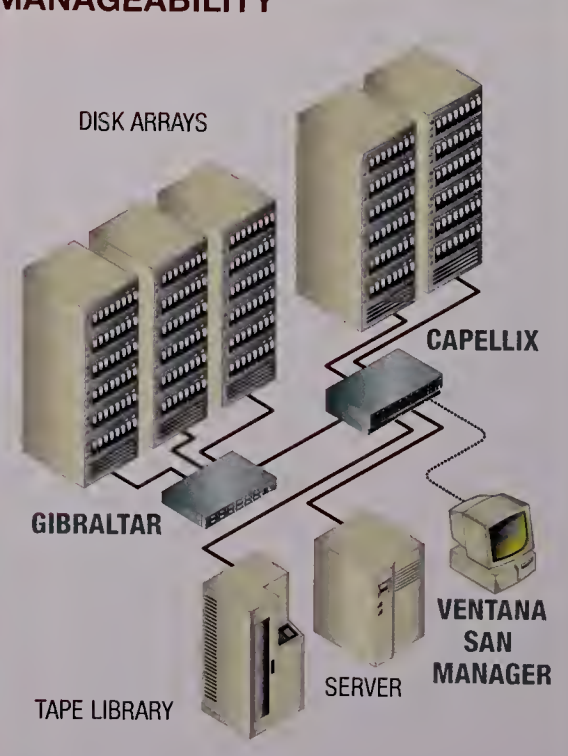
Ventana SAN Manager Provides End-to-End Monitoring and Control

HIGH PERFORMANCE CLUSTER





MANAGEABILITY



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Capellix™ 3000 Modular SAN Switch The Capellix 3000 switch is the industry's first modular SAN switch. Its unique modular hardware and software architecture provides a flexible, expandable platform designed to satisfy your growing needs in the rapidly evolving SAN environment. Unlike fixed configuration switches that are limited in scalability and extensibility, the Capellix 3000 provides seamless expansion through its three plug-in modules. Scalable from 6 to 34 ports and with a 28-gigabit-per-second switching backplane and a state-of-the-art, ultra low latency switching engine, the Capellix 3000 has enabled record setting TPC-C benchmark performance. Through its modular architecture, the Capellix 3000 is designed to support future requirements and advancements such as new industry standards, multi-gigabit fibre channel uplinks and WAN and LAN protocols.

Capellix™ 2000 Stackable SAN Switch The Capellix 2000 is the industry's first stackable SAN switch. With 8 ports and an expansion slot, the Capellix 2000 represents an affordable entry-level SAN switch with high-end expandability and extensibility. Unlike fixed configuration switches that do not provide a means for expansion, the Capellix 2000 is designed to provide add-on port and multi-gigabit fibre channel uplink capability through a plug-in expansion module. The Capellix 2000 provides the same record setting performance of the Capellix 3000 in a lower port count package and at an entry level price.

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Briefs

BMC Software last week unveiled two software tools for recovering from database errors.

Resolve High-Speed Transaction Recovery lets systems managers recover DB2 databases running on mainframes.

The software can restore a database to a previous point in time, erasing specific transactions that corrupted the database.

The software is shipping now starting at $80,000. Resolve SQL Backtrack for Oracle can quickly take a snapshot of a database, then perform a backup while the database continues to perform normally.

The idea is to reduce the time the database is unreachable. The software will ship in March.

BMC: www.bmc.com

Appliant.com last week introduced a service for monitoring the performance and availability of Web sites.

The Lateral Line Network service uses monitoring agents on clients and servers to measure network delay, server response time and time spent rendering Web pages. The service starts at $1,500 per month.

Appliant.com: www.appliant.com

IBM has reorganized its SecureWay security software business, bringing it under the umbrella of the Tivoli network management group.

IBM also says it is integrating its Intraverse single sign-on product, which it acquired last year from Dascom, into the Tivoli network management system. In addition, Intraverse will be integrated into future editions of IBM middleware, including MQSeries.

E-mail growth hogs enterprise resources

Users downplay fears, but note spikes in number and size of messages.

BY JOHN FONTANA

Now that most enterprises appear to have dispatched the Y2K bug, they may want to concentrate on a couple of other pesky critters that have the potential to chew through the storage resources and bandwidth dedicated to corporate e-mail.

Ferris Research, in a report released earlier this month, says an increase in the volume of messages per user and in the size of those messages over the next 12 months could catch companies off guard and overload their network bandwidth and storage capacity.

Users say they are noticing the trend, but downplay the chance of e-mail loads overwhelming their network resources.

The research shows that the average number of messages received by end users is expected to jump 81% to 34 per day in the next year. In that same time frame, the average size of a message is expected to increase 192% to 286K bytes.

"People treat e-mail like it's UPS, putting attachments on everything," says John Cebuly, network analyst for Ceridian Employer Services in Minneapolis. "It's a good possibility we could see this kind of growth over the next 12 months — users will get away with anything they can." Cebuly recently discovered a user on his mail system with 3G bytes of stored data.

He is not worried, however, about being overwhelmed by a spike in the number of e-mails. Ceridian has overprovisioned for storage and has enough bandwidth to make it a nonissue, he says.

But David Ferris, president of Ferris Research, says e-mail administrators in the next year should increase bandwidth allotments by 3% to 5%, and storage should be more than doubled.

The Ferris research focused on 24 large enterprises and government agencies, including Alcoa, Bank One, Nabisco, Texas Instruments, the U.S. Federal Aviation Administration, the government of British Columbia and Unilever.

Ferris says volume is increasing just by the fact that more people are using e-mail, and message size is exploding due to the attachment of images.

There are nearly 170 million corporate e-mailboxes worldwide, more than three times the number of mailboxes just five years ago, according to Eric Arnum, editor of "Messaging Online," a Web-based newsletter. That is only a slice of the approximately 440 million corporate and personal mailboxes worldwide, a number that is rising sharply because of the advent of free e-mail services.

"With the Internet going nuts and people communicating virtually instead of face to face, the number of messages is going way up," says Durwin Sharp, e-commerce advisor for Exxon. Sharp thinks the need for more bandwidth will be much greater than Ferris predicts, but that storage needs will be much lower.

"We've been seeing a steady rise in the need for both and have been doing some things to combat it," he says. Exxon has been steadily increasing its storage capacity and bandwidth over each of the past few years.

Ferris says enterprises should be proactive and put monitoring tools in place to plot future needs: "It's time for people to start watching their messaging environments very closely." ◪

Message tracking

Ferris Research says that over the next year there will be a need for customers to dramatically increase bandwidth and storage allotted to messaging systems.

Messages per day	Average now	Average in 12 months
Received	19	34
Sent	14	23
Message size	92K bytes	286K bytes
Mailbox size	61M bytes	98M bytes

SOURCE: FERRIS RESEARCH, SAN FRANCISCO

Messaging

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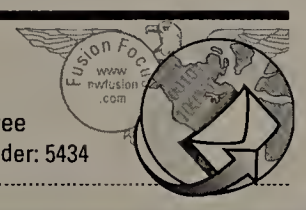


Xerox spinoff touts service for better Web surfing

BY CAROLYN DUFFY MARSAN

PALO ALTO — Corporate workgroups looking for a more productive way to search the Web can now access a free Internet service for sharing bookmarks that was developed at the Xerox Palo Alto Research Center.

Called GroupFire, the service lets users access, search and share their favorite Web resources from any computer over the Internet. GroupFire has a surf-along user interface that automatically records an end user's favorite URLs. The list of URLs is regularly updated to reflect changes in a user's surfing habits. The list can be kept private or posted to a group.

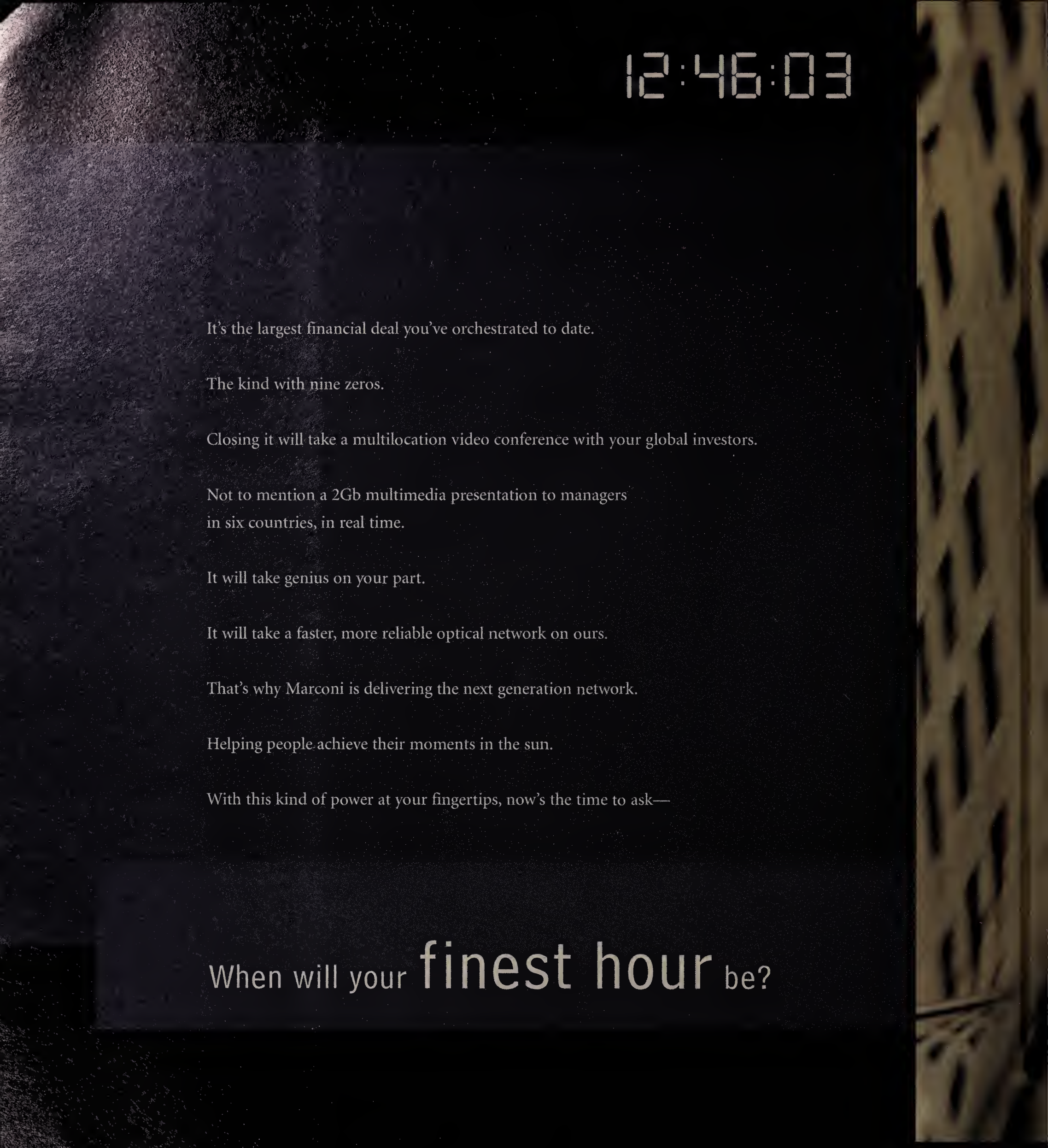
"Our focus is on URLs," says Jim Pitkow, a research scientist at Xerox PARC and CEO of a spinoff venture set up to commercialize the GroupFire technology. "URLs are the currency of the Web. That's how we refer to documents. GroupFire makes it easier for people to share URLs."

GroupFire received its initial funding from Xerox, which maintains minority ownership. GroupFire officials are in the process of closing a first round of venture capital funding. The management team consists of six researchers from Xerox PARC — with expertise in information retrieval, language processing and Web technologies — who are working on the start-up full time.

GroupFire released a beta version of its service in early December. The offering requires no software on the client. A final version of the service will be available this quarter.

The GroupFire service is free to end users and will be sold through OEM

See **Xerox**, page 36



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Marconi

Start-up serves accounting applications over the Internet

BY JOHN COX

CUPERTINO, CALIF. — A start-up plans to use the Web to create an updated version of the old mainframe-based service bureau, in this case for accounting applications.

Instead of selling its server-based general accounting software, application service provider Intacct Corp. is letting midsize companies rent the software for as little as $50 per month. Customers access the service from a Web browser over a standard Internet link. What's different here is the way Intacct also is courting software and consulting partners, which will link their applications to the Intacct accounting programs.

"They're offering a horizontal accounting service and publishing APIs to encourage vendors with expertise in particular vertical markets to participate," says Harry Fenik, executive vice president at Zona Research, a Redwood City, Calif., market research company.

The focus on multiple vertical markets is key, Intacct executives say.

"One vendor simply cannot create all the accounting functions itself," founder and CEO David Thomas says. His idea is to make Intacct a "financial hub" for a growing array of Web services aimed at particular types of businesses, such as doctors offices, law firms and machine tool companies.

The newly minted Intacct is stepping into a market in which more than 100 accounting software vendors already ply their wares. But Thomas says customers will be drawn by the fact that Intacct's software is accessible via the Web and requires only a low monthly fee.

The software runs on Unix servers hosted by network service provider Verio. Within Verio's facility, Intacct created a separate "vault" protected by a Cisco firewall. Load-balancing software will spread traffic over an array of Intacct-built Web application servers, which are linked via Cisco switches to Unix servers running an Oracle8i database. Customers only need a Java-enabled Web browser, proper clearance and a password to access accounting information.

A key challenge was designing a user interface that was responsive and interactive, mimicking the features found in Windows applications. Besides the familiar online help, Intacct will use the services of Livehelp.com, a Web site that lets a user connect with an expert through interactive chat.

The Intacct service is available starting this week. Pricing starts at $50 per month for two users. Blocks of five additional users can be added for $20 per month. Companies can try Intacct free for 90 days.

Intacct: www.intacct.com

PROFILE: INTACCT

Headquarters:	Cupertino, Calif.
Founded:	June 1999
Primary business:	Web-accessible, hosted accounting service.
Key employees:	David Thomas, founder and CEO; Robert Riopel, chief financial officer; Bruce Mitchell, vice president of marketing.
Funding:	Privately funded.
Fun fact:	A key service to help customers use the Intacct software, www.livehelp.com, was added after founder Thomas' wife used the same feature trying to find out if an online retailer had a sweater in a particular color.

Xerox,
continued from page 33

arrangements to search engine and portal vendors. Company officials expect to announce the first OEM sales in the next month or two. The goal of these deals is to provide personalized searching, in which the criteria used to answer a query includes a profile created from the end user's bookmarks. By combining bookmarks with searching, GroupFire hopes to improve the relevance of a search engine's results.

"We have technology that enables personalized search," Pitkow says. "You'll get results back that are relevant to you."

Later this year, GroupFire will announce a software product for internal corporate use.

GroupFire competitors offer services that let end users store, access and search bookmarks from any computer on the 'Net, but these services do not offer workgroup functionality.

For example, San Francisco-based Backflip, which was launched in November by two Netscape veterans, offers a free service that lets end users record and search through their bookmarks by clicking on a special toolbar. Backflip officials say they will soon update the service to let users share their favorite URLs.

HotLinks, a Mountain View, Calif., start-up that launched in 1998 and is funded by CMGI@Ventures, is offering a community bookmarking service that lets users share their favorite Web sites and view the public links of other members.

In December, HotLinks published an online guide to all the public links that its members had posted — like a popularity ranking of Web sites. The guide is designed to be an alternative to traditional search engines. ◪

PROFILE: GROUPFIRE

Headquarters:	Palo Alto
Founded:	November 1999
Product:	GroupFire shared bookmarking service.
Key Employees:	Jim Pitkow, CEO; Hinrich Schutze, chief operating officer; Todd Cass, chief technology officer; Eytan Adar, vice president of business development; Andy Martinez, vice president of engineering; Tom Breuel, advisor and co-founder.
Funding:	Minority owned by Xerox; initial round of venture capital funding to be announced.
Fun fact:	The six GroupFire managers are all Xerox PARC researchers.

CHECK ONE

GROW A DSL NETWORK

GROW YOUR JOB DESCRIPTION

When you're in charge of deploying a business-class DSL network, less is definitely more. The fact is, when you were asked to put together a nationwide DSL solution, you already had a job. But now you're faced with planning, coordinating, installing, and managing a a nationwide DSL solution for a group of remote workers.

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'Net Insider . Scott Bradner

IGNORANCE IS BLISS

The U.S. court system is beginning to enforce one of the more controversial provisions of the recent copyright protection legislation. It is far from clear whether the organizations that pushed for the inclusion of this provision ultimately will be badly hurt by its enforcement.

The Digital Millennium Copyright Act, signed into law by President Clinton on Oct. 28, 1998, (available at http://thomas.loc.gov) prohibits "any technology, product, service, device, component, or part thereof, that . . . is primarily designed or produced for the purpose of circumventing protection afforded by a technological measure that effectively protects a right of a copyright owner."

Two weeks ago, two U.S. judges — one in New York and one in California — ruled within a day of each other that Web sites posting copies of the DeCSS software, designed to circumvent the copy protection of DVDs, violated the Digital Millennium Copyright Act.

Material on DVDs is encrypted to prevent unauthorized copying. The encryption that was chosen is not that good, and most observers felt it was only a matter of time before someone would figure out how to break it. In fact, the encryption is so poor that many legal scholars believe that the DVD people were trying to set up a "low curb protection" — i.e., that the encryption was only there to force a user to take an explicit action to circumvent it, not to give actual protection. This might make it easier to prosecute violators. (There might even be an argument that DeCSS did not violate the act because the act refers to "effectively protecting" the rights of a copyright holder and the DVD encryption could be said not to do that.)

But if this prohibition is carried to its logical extreme, the act will outlaw the software that cryptographic researchers use to figure out if encryption algorithms are any good. Without this kind of testing, copyright holders might just pick an encryption algorithm that is even weaker than the current DVD one to try to protect even more valuable content. You not knowing that your protection is weak will not prevent others from finding out.

Note also that the act only covers the U.S. — the DeCSS program was written outside of the U.S., so it is not directly subject to U.S. law. The U.S. courts may be able to prevent U.S.-based Web sites from knowingly making DeCSS available, but there will always be plenty of non-U.S. sites where it will remain available. And DeCSS will get posted periodically to newsgroups that will automatically distribute it to millions of U.S. Internet users.

Any U.S.-based prohibition is likely to be largely ineffectual and will not affect the piracy factories where most of the illicit copies are made. Might it be that the copyright industry is just trying to add yet another small legal curb that can be pointed to when the industry takes some teenager to court over an extra copy of "Austin Powers"?

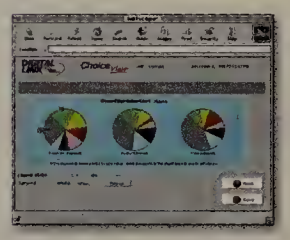
Disclaimer: The headline of this column and Harvard University do not belong on the same page, so the above must be my own opinion.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

WHERE DO YOU STAND ON NETWORK MANAGEMENT?

You stand right next to a workstation in the network operations center. And if you want to know what's going on over your frame relay WAN, you're not going anywhere.

Digital Link has corrected this rather heavy problem with its new i-Net Management Suite – a powerful combination of intelligent network access systems and management software. The suite includes ChoiceView Network Monitor, an easy-to-use network management tool that lets you look at real-time performance statistics with any web browser. So you no longer have to stand faithfully by a dedicated management platform to check your SLAs. You don't even have to set foot in your office.



ChoiceView lets you monitor and proactively manage the entire protocol stack from any Java-enabled browser.

Visit www.dl.com or call 888-280-5465 to learn how your company can take a giant step forward in WAN management.

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The Point of Contact℠

Sprint Delivers e-Business Results

You know e-business is where it's at. The question is: how will you get there swiftly and safely? You need the right expertise. You need time to evaluate different technologies and launch new strategies. There's the onerous task of finding skilled employees. And if that's not enough, you've got to do it all with less—that is, keep a line on costs while keeping an eye on the competition.

It's why businesses of all sizes are looking closely at how they can leverage outside resources to make the most of their information technology (IT) resources. In fact, analysts predict 80 percent of all companies will rely on third-party support for some portion of their IT operations over the next few years. But with so many vendors claiming to provide "end-to-end solutions" and "expert consulting services," knowing where to turn can be not only confusing, but risky.

A New Approach

As information and communications technologies merge to create the new e-business driven economy, Sprint is one of the few providers that offers integrated solutions from the desktop all the way through the wide area network.

Leveraging the expertise of Sprint Paranet, Sprint's IT consulting and integrated-network management organization, Sprint has provided end-to-end consulting and integrated network management to more than 440 of the Fortune 1000 companies. Sprint delivers total expertise for telecommunications options, managing networks and associated information technologies. That means you have a single point of contact for both communications and application integration. And it means that Sprint can more effectively bring together the products, services and expertise to help you seize e-business opportunities.

Setting e-Business in Motion

Sprint's portfolio of IT consulting services, Sprint Enterprise Network Services, is a comprehensive set of key practices based on a simple-yet-powerful strategy: each practice is carefully aligned with today's new ways of doing business. It's an approach based on proven methodologies designed to transform your IT assets from a cost center to a business enabler.

Sprint. Sprint Paranet

The Point of Contact℠

"Sprint Paranet gave us what everyone promises, but no one else delivered—a comprehensive, totally integrated e-commerce solution. We told them about our business goals and our customers, and they designed the e-commerce solution we needed. We were able to stay focused on our business of making the world's finest bicycles for some of the world's most demanding customers."

— Mark Soderberg, CEO of Volant Sports; President of Yeti Cycles.

The practices include:

■ **Enterprise Network Security:** The security and availability of your IT infrastructure is paramount to your business success. Sprint is devoted to helping you design, integrate and manage policies and processes for security, business continuity planning and disaster recovery.

■ **Enterprise Network Management:** This practice provides essential resources for supporting your IT infrastructure, including a suite of managed services delivered on site by Sprint consultants, or remotely by Sprint's Remote Operations Center. The managed services include: Common Services such as change management, help desk, and call center; Managed Database; Managed Desktop; Managed Server and Applications; Managed Network; and Managed Security. Other available services include strategic IT architecture planning and deployment for addressing total cost of ownership.

■ **Enterprise Application Deployment:** The move to a virtual marketplace requires expertise in management and integration of cutting edge applications, such as enterprise resource planning (ERP), customer relationship management (CRM), supply chain management, sales force automation, and electronic data interchange (EDI). This practice addresses these new applications as well as provides expertise in foundational communication applications like email and groupware—all designed to keep you in touch with your customers and vendors, and ahead of the competition.

■ **Enterprise Network Convergence:** This practice focuses on the convergence of voice, data and video traffic to reduce costs and complexity. Experts work with you to design and implement a customized solution to optimize application deployment using the latest broadband and WAN technologies such as Sprint Integrated On-Demand Network (ION).

■ **Emerging Technologies:** Keeping pace with your business needs takes leading-edge solutions, careful planning and foresight. The Emerging Technologies practice uses proven processes to help you deploy strategic and innovative technologies, ensuring you have the agility and flexibility to stay ahead with the latest solutions.

The foundation of Sprint's Enterprise Network Services is NOMAN®, Sprint's exclusive Network Operations MANagement framework. A knowledge base of best practices, NOMAN relies on time-tested techniques for helping you proactively plan, manage and support your network IT environment. The NOMAN knowledge base organizes and aligns information technology processes to meet individual business initiatives, so that your unique needs are addressed with the greatest accuracy and results.

You're There Now

A key advantage of Sprint's consulting approach is indeed the fact that it gives companies access to leading experts and proven methodologies. But more importantly, the resources of Sprint can address both the communications network and IT products and services required to succeed in today's e-business environment. Sprint Enterprise Network Services provide a unified look at how to best enable your IT resources to enhance service levels externally to your customers and internally to your business units, as well as reduce complexity of your IT infrastructure and reduce your total cost of ownership. ■

For more information call 1-888-947-7638 or visit our web site at www.sprintparanet.com

Trends Magazine, Sprint Paranet/Enterprise Network Services. Writer: Jeanne Swartz, December 29, 1999

Item Number: MKT30

Ask Dr. Intranet

By Steve Blass

We're a start-up with a distributed work force that needs to send Internet mail through our Unix mail server from a variety of locations, including sites that receive laptop IP addresses from a local DHCP server. Sendmail seems to control relaying based on domain name and/or IP addresses. We want to let our people send Internet mail through our server from their Windows laptops wherever they are. We don't want anyone else to use our mail server as a relay host. How can I perform user authentication without implementing a full virtual private network (VPN)?

Check out Sendmail information at sendmail.org, sendmail.net and sendmail.com. The configuration FAQ at sendmail.net recommends that mobile users reconfigure their mail client to use the local site's mail server for sending mail. You also can set the "relay_local_from" parameter in Sendmail to let users get mail through your server based on their e-mail address. In the end, you will probably want to implement a VPN to authenticate and protect your network services. Until then, there are tools available to control Sendmail relaying by opening the service to users who have authenticated using a Post Office Protocol 3 (POP3) client. One tool, poprelayd, is available at www.cynic.net/~cjs/computer/sendmail/poprelay.html. This won't help at sites that don't allow POP3 clients to talk to servers outside their firewall, but it might be what you're looking for.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at drintranet@paranet.com

Diameter extends remote authentication

BY MARK ROY

Authenticating remote users has always posed a challenge to network managers. The authentication mechanism should be as strong and simple as possible to minimize network overhead and the impact on overall response times.

The best-known authentication protocol for these qualities is Remote Authentication Dial-In User Service, or RADIUS.

But some users are finding RADIUS unable to cope with their more mobile work habits. The "Dial-In" piece gives a clue: RADIUS was designed to function only with Serial Line Internet Protocol and PPP for standard analog modems. It is not extensible and so cannot be used for access authentication of handheld or other wireless computing devices, cellular phones or Ethernet-based virtual private networks (VPN).

For most users, the solution will come in the form of an authentication protocol evolved from RADIUS, called Diameter.

Now in draft status at the Internet Engineering Task Force, Diameter is designed to do more than RADIUS in terms of authenticating more types of users and yet maintain compatibility with RADIUS-based systems.

Like RADIUS, Diameter is a "triple-A" protocol — it authenticates and authorizes users and performs basic back-end accounting services for bookkeeping purposes.

Also like RADIUS, the basic Diameter transaction involves what are called attribute value pairs (AVP). For example, an AVP might be "user ID" and "Joe Smith," or "password" and "goldfish."

Upon receiving an authentication request, a RADIUS or Diameter server typically issues the user ID attribute as a challenge, to which the requesting user system responds with the user value — the ID. Then the server issues the password attribute. If the user value response is correct, the user is considered authentic.

But the AVP exchange goes beyond simple authentication, and this is where authorization comes in. Through its other value pairs, the server can further qualify the user to determine the specific resources to which the user will be granted access. For instance, access to a high-security application might require the user to supply a private-key code.

This is possible with RADIUS but easier to implement with Diameter because Diameter lets a remote server send unsolicited messages to a client. This way, if the user sends only the password, the Diameter-equipped server sends another message, requesting the private-key code.

Perhaps the most important difference between Diameter and RADIUS involves the scope of AVP use. The RADIUS address space is limited to 256 value pairs. However, Diameter features a 32-bit AVP address space, enough for a million or more pairs. This AVP potential is what gives Diameter extensibility. The more powerful Diameter value pairs are also able to serve mobile, nondial-up users.

For instance, one Diameter value pair involves "home-agent-address" as the attribute and uses an IP address as the value. A mobile user calling from a cell phone might use this to pass through to the Diameter server of his or her home agent ISP in order to authenticate the user ID and password value pairs. This is how Diameter liberates users from the SLIP or PPP dial-up tethers.

Also like RADIUS, Diameter supports the two industry-standard challenge response protocols — Password Authentication Protocol and Challenge Handshake Authentication Protocol — as the actual transport mechanisms for maintaining security while passing AVP information across the network.

But in order to allow for authentication through a third party — for instance, through a remote ISP to the user's home-agent ISP — Diameter also enhances the previously limited proxy capabilities of RADIUS. This way the remote ISP is allowed to create a proxy back to the user's home agent ISP, and on to the home-agent Diameter server. From there, the home-agent ISP and the user can carry on their authentication transaction. Once that is complete, the home agent ISP tells the remote ISP to give the user service.

Diameter also lets the two ISPs exchange the necessary billing information, so the home agent ISP can bill the user and settle accounts with the remote ISP.

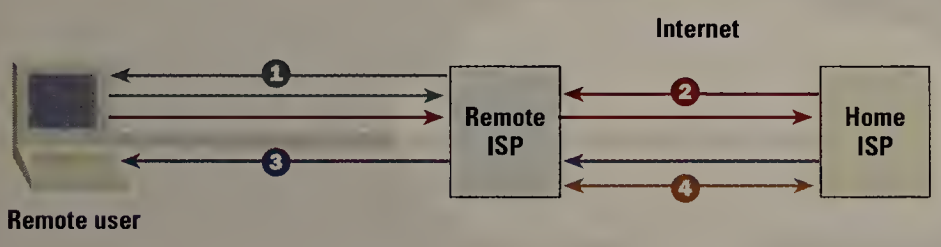
By permitting this type of roaming, and by offering extensibility to handhelds, cell phones and other devices yet to be invented, Diameter redefines remote access for contemporary users.

Mark Roy is a product engineer in 3Com's Network Management Division. He can be reached at Mark_Roy@3Com.com.

HOW IT WORKS

Taking the measure of Diameter

Expanding on the capabilities of RADIUS, the Diameter protocol authenticates and authorizes users, while also allowing for basic back-end accounting services.



1. The user requests service from the remote ISP, which in turn requests the user's credentials.
2. The user submits ID, password and the IP address of his home-agent ISP. The remote server performs mutual authentication with the home-agent ISP, and then forwards the user's credentials.
3. The home-agent ISP accepts the user's credentials, and then tells the remote ISP to grant access to the user.
4. Subsequently, the two ISPs update their call accounting records.

Gearhead — inside the network machine . Mark Gibbs

An inside look at the Simple Mail Transfer Protocol

"No man is an island so long as he is on at least one mailing list."
— Anon.

This week, we will start to look at the root of all e-mail: Simple Mail Transfer Protocol, or SMTP. SMTP is a venerable protocol first defined in 1982 (an Internet epoch ago) by the legendary late Jon Postel (see RFC 821 at http://www.ietf.org/rfc/rfc0821.txt). Such antiquity makes SMTP probably the most widely used protocol on the Internet after the Web's HTTP.

SMTP is used to send messages as distinct from protocols such as the Post Office Protocol (POP) and the Internet Message Access Protocol (IMAP), which are used for retrieving messages.

Given the huge number of mail servers on the Internet, it would be impossible for these retrieval tools to poll all of them looking for mail. So instead, SMTP servers look at the destination address of a message and contact the target mail server directly. Of course, this means the Domain Name Service (DNS) has to be configured correctly otherwise mail could be handed to the wrong server — potentially a big problem because, unless you have encrypted your messages, your e-mail will be in plain text!

By changing the DNS data that defines the name of a mail server for a given domain, a hacker could simply read and relay all the mail. And with a little skill, the hacker could make the relay undetectable to even quite experienced system administrators.

Neither rain nor snow

SMTP was designed to be a reliable message delivery system. Reliable in this case means that a message handled by SMTP is intended to get to its destination or generate an error message accordingly. Now, before Gearhead goes further you must realize that SMTP is not a guaranteed delivery service, it just does its best. To guarantee delivery requires all sorts of data exchanges that would add considerable communications overhead that would be pointless for everyday purposes.

TCP provides reliability

SMTP communications are transported by TCP to ensure reliable end-to-end transport. RFC 822 (titled "Standard For The Format Of ARPA Internet Text Messages" and also dated 1982 — see http://www.ietf.org/rfc/rfc0822.txt) defines the format of SMTP messages.

RFC 822 is a straightforward specification that defines the layout of messages. It breaks the message into headers and bodies separated by a blank line. In the header are a number of keywords and values that define the sending date, sender's address, where replies should go, and so on, while the body contains the data.

To send an SMTP message requires an exchange between the sender and receiver. First, the sending server says "HELO." Honest — SMTP servers are very polite. The sender should announce the domain it is sending from, and the receiver should reply with a completion code of 200 if it is willing to talk.

Of course, if the sender has been a bad boy and has sent a lot of junk mail, he may have been listed on the Mail Abuse Prevention System (MAPS) Realtime Blackhole List (RBL). See http://maps.vix.com/rbl/. In which case, if the receiver subscribes to RBL, a lookup will determine if the sender is to be trusted and act accordingly.

In a future Gearhead, we'll take a look at the MAPS RBL, a fascinating example of a collaborative effort to thwart spammers.

Next week, we'll get beyond saying "hi" and actually get a message transferred. Well, we'll try, but you know how it goes. How does it go? Tell us at gearhead@gibbs.com.

NetworkWorld Fusion

Spotlight

News, tips and tools from our Web site

E-comm central

We've updated our E-commerce Research area to include primers, case studies and articles about business-to-business e-commerce. Find out how to generate an e-commerce business plan in five easy lessons from Webmonkey. Find out how to use Unix and NT in your e-commerce environment with a whitepaper from Marken Communications. And find out the legal implications of doing business on the Internet from Brown & Bain attorneys.

DocFinder: 6629

Help Desk

What happens when Windows NT blows away your only copy of your Emergency Repair Disk (ERD)? Besides a lot of frustration, it can mean a lot of lost files. A reader recently experienced this problem and wants to know if the ERD can be saved to more than one floppy. He also wants to know if the repair process can be run on additional floppy disks. Help Desk Editor Ron Nutter suggests making a backup copy of the WinNT Repair directory to another place on the drive or preferably to another drive. Read his other tips in this week's column.

DocFinder: 6630

Our redesign

Last week, we rolled out the new and improved Network World Fusion. With a bold new look and a stronger emphasis on research and breaking news, we feel we've made the site easier to use. But what do you think? Is there anything you would like to see on the site that isn't there? E-mail Online Editor Adam Gaffin at agaffin@nww.com.

Fusion Face-off

ASPs are hot, but are they right for you? You could just lease your application from a vendor. U.S. Internetworking says ASPs are the way to go because they take total end-to-end responsibility for your operation. But Oracle contends that vendors know best how an application should run and have instant access to upgrades and interoperability improvements. Join executives from both firms.

DocFinder: 6631

NOS debate

Last week's East Coast blizzard forced the cancellation of our NOS Showdown at the ComNet 2000 show in Washington, D.C. But the snow didn't stop Fusion, so our online debate on the merits of different NOSes went on as planned. In fact, it's still going on — along with a discussion on the merits of our review, the one that annointed Windows 2000 king of the NOS hill. Jump into the debate.

DocFinder: 6632

Internet balkanization

In his "In the Works" column last week, IETF Chairman Fred Baker worried that the explosion of domain name registrars around the world could lead to the Internet becoming a set of networked islands. A New Zealander writes that the 'Net is already balkanized due to what he calls greedy U.S. carriers extracting large fees to provide connectivity to countries such as his. Read his comments and Baker's original column.

DocFinder: 6633

Help Desk

Ron Nutter is standing by to answer your networking questions. Read his column every week on Fusion. DocFinder: 2450

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Editorial

The raging NOS debate

In the network community, it is safer to talk about politics and religion than network operating system (NOS) preferences.

Nothing brings out the vitriol more than a good debate about the relative merits of Novell NetWare vs. Microsoft Windows. If you don't believe me, log on to Network World Fusion and check out the tongue wagging in the forum that goes with our "King of the NOS hill" review, which ran last week.

Among a few kindly worded admonishments about not fully agreeing with our results, were entries like this:

- "You gotta be kidding with these results."
- "You must be on drugs."
- "Too much bias — canceling my subscription."

And my favorite, which simply said: "Oh dear!"

Discounting the lunatic fringe and their conspiracy theories about *Network World* being controlled by Microsoft, criticism seemed to fall into two broad camps.

One group seemed to have trouble digesting the fact that some of the 12 scores we awarded each NOS — NetWare 5.1, Windows 2000 Advanced Server, Red Hat Linux 6.1 and SCO UnixWare 7.1.1 — were based on benchmark tests, while the others were based on a subjective review of features supported.

Although we say in the story what was tested and what was not, in retrospect we could have made that clearer, perhaps by breaking the piece in two and labeling one section "test results" and the other "opinion."

The other major block of criticism took exception to the subjective scores we handed out for scalability, security and stability/fault tolerance.

Admittedly, "stability" was a poor choice of words on our part. The only way a system can earn that badge is a few years of hard labor in the real world. But more importantly, these results simply reflect the reviewer's opinions about product features which, in the case of fault tolerance, meant looking at things like RAID support and memory protection.

Did we get everything right? That debate is still raging online and, truth be told, that is part of the value of this kind of exercise. The discussion among experienced people adds context to the original research.

Curiously enough, lost in most of the online debate is the fact that Novell won the performance category. People don't seem to care, caught up as they are with the idea that someone found something to like in Microsoft's forthcoming product.

— John Dix
jdix@nww.com

Message Queue

No quick fix

My personal experiences are very similar to those Mark Gibbs mentions in his "Backspin" column "Could you fix my PC?" (Dec. 6, 1999, page 89).

"Sure I can do the work for you" is a response that I have had to swallow a number of times. If I don't follow that phrase with, "My rate is $xxx per hour," people then expect that I will always be on call for them and that the work will be done gratis. My free work is limited strictly to immediate family if it is for their personal systems; if they are operating a business, they pay.

I don't expect the man two doors down from me to fix my frozen pipe just because he's a plumber by trade. I'll call a contractor in the spring and pony up whatever the going rate is. If he wants me to connect him to the Internet, then we do another deal.

Doug Hoover
President
DRH Enterprises
Carleton Place, Ontario

I read Mark Gibbs' "Backspin" column "Could you fix my PC?" and could not resist responding to the questions he posed, since they appear to be of an ethical, rather than technical, nature.

I am a Muslim woman, born and raised in Canada, and belong staunchly to the Islamic tradition. I was quite surprised at Gibbs' adverse attitude toward the request of an "acquaintance" for assistance with her PC. Is it feasible to assume that such an attitude is attributable to Western culture?

Gibbs writes that this woman was his hostess for the evening. I don't know about Western traditions, but the Islamic tradition emphasizes mutual respect and kindness toward those who are your guests and those who are your hosts.

As Muslims, we do our humanly best to avoid such ridiculous distinctions as "acquaintance" and "friend"; we are taught to be warm and responsive to the needs of all people we meet during the daily business of life. Even from a secular perspective, it makes sense to scratch someone's back in the understanding that at some point you may need your own back scratched.

Gibbs' questions ("Do they think what we do has little intrinsic value? Do these people think that PC knowledge is not important?") belie a kind of arrogance associated with a machine that is a product of the limited human mind and is very prone to failure and error. What Gibbs fails to see is that his knowledge of computers is a worthless thing unless it can be employed in the service of other humans — charitably, without a paycheck attached.

Asifa Sheikh
Markham, Ontario

Long live ATM

Regarding your article "Pulling the plug on ATM" (Nov. 29, 1999, page 61):

Traffic analysis repeatedly indicates that despite user demands for faster connection rates, users receive adequate service with 10M bit/sec shared Ethernet and good service at 10M bit/sec switched Ethernet. Gigabit Ethernet doesn't make sense apart from a data-only "shove it" approach to capacity planning.

I have an ATM-to-the-building network connecting more than 80 buildings, 12,000 network devices and 15 campuses. ATM has proven itself to be reliable. LAN Emulation requires detailed knowledge but is effective in providing an organizational basis for IP subnetting, traffic management and traffic segmentation.

Your article, while well-reasoned and not obviously bigoted in its technical preference, doesn't reflect the reality. LAN managers aren't enterprise network managers. Staff who come from a Certified Novell Engineer or Microsoft Certified Software Engineer perspective usually are not as experienced or knowledgeable about WAN, routing, IP, telephony and telecommunications considerations in enterprise network architectures.

Paul D'Agostino
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Monash University
Melbourne, Australia

Send letters to nwnews@nww.com or John Dix, editor in chief. Network World, *118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.*

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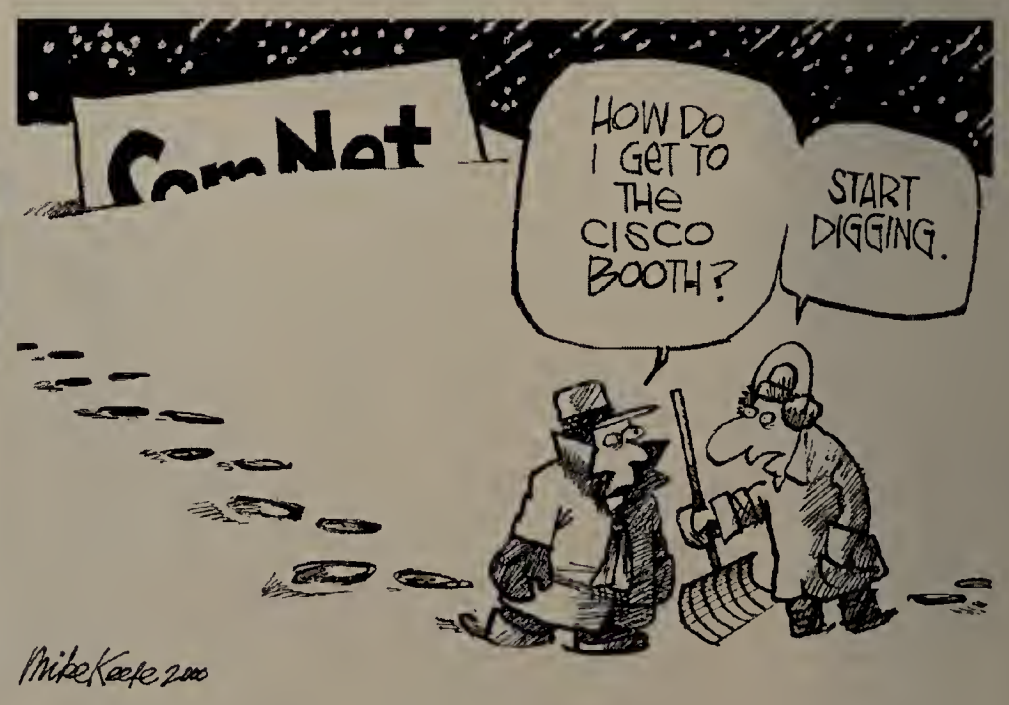

Intranet Adviser . Daniel Blum

EASY-TO-USE PKI IS KEY TO CRYPTOGRAPHY'S SUCCESS

No longer the exclusive province of mathematicians, cryptography is moving into the mainstream. According to one survey, there are now almost 1,600 cryptographic products on the market worldwide, and export controls are being removed. But before cryptography actually can become a commodity, there are still a few challenges to overcome.

For instance, some say we'll reach the pinnacle of cryptography when public-key infrastructure (PKI) finally enables mass distribution of cryptographic keys and digital signatures. Others argue that PKI is risky, hard to use and still has a long way to go. As usual, the truth lies somewhere in the middle.

Standards are falling into place, and customers have a choice of "last mile" mechanisms to wrap, enable or upgrade many applications for PKI. Customers also have a choice of vendors, and the market is showing some healthy consolidation with Baltimore Technologies' acquisition of GTE's CyberTrust unit and Verisign's acquisition of Thawte Consulting.

But we still don't know what it takes to make a digital signature as safe as a handwritten signature. We're still not sure whether it's good enough to hold private keys in software, whether today's smart cards are sufficiently secure and convenient, or whether we need new devices, such as mobile phones, to act as smart cards.

With so much uncertainty, portal access management vendor enCommerce says its major dot-com consumer sites are sticking with passwords. Lockstar, which sells software to authenticate PKI users to IBM's Resource Access Control Facility, says its customers want password support as a "transition strategy."

Perhaps we'll be closer to the pinnacle of cryptography by 2002 or 2003. By then Windows 2000, which embeds most major cryptographic algorithms and protocols, may hit critical mass. For many small to midsize businesses, Microsoft's McCrypto could be good enough. But some large enterprises will need greater scalability, flexibility and capability than Win 2000 can deliver.

Uncertainty aside, today's e-business imperative waits on no protocol, and your efforts to enable e-business will soon stall without a good security and directory infrastructure. Enterprises must prepare for PKI soon to forestall a proliferation of inconsistent suppliers, naming conventions and policies. A good general strategy is to begin by building an enterprise and e-business directory as your foundation for identity management, policy management and flexible access control.

In parallel, define a security architecture and migration strategy that provides security through browsers, Secure Sockets Layer and passwords in the short run, and gets you started on PKI by deploying technologies such as IP Security virtual private networks and the Secure Multi-purpose Internet Mail Extensions e-mail standard.

Once PKI is as easy to use as passwords — and we can understand how to manage related directory and security services — we can aspire to reach the pinnacle of cryptography.

Blum is senior vice president and principal consultant with The Burton Group, an IT advisory service. He can be reached at dblum@tbg.com.

The Searchlight . Danny Sullivan

HOW TO MAKE SURE USERS FIND YOUR SITE

Search engines are one of the most popular ways in which users find Web sites. Yet amazingly, many companies neglect to take basic steps that will improve their chances of being found via search engines. There are easy things that you can and should be doing to increase your search engine visibility.

Does your site use frames? If so, you've put up a roadblock to many search engines that crawl the Web to make their listings. Drop the frames, or at least reduce their use to areas where they are truly required.

Do you deliver pages dynamically? If so, and your URL looks something like "www.mysite.com/cgi-bin/getpage.cgi?name=products," then you've put up another roadblock to crawler-based search engines. Most will read the URL up to the "?" symbol, then go no further. To test your site, try reaching your pages by cutting everything from the "?" symbol onward. If you still get the page, no problem. If you don't, then the search engines won't. Seek a workaround. And if you are considering moving to a dynamic system, be sure to ask potential vendors about problems their products have with search engines before you convert.

Do you have a splash page or a home page that is mainly a big image? If so, dump it. The home page is the most important one you present to crawler-based search engines. They don't read graphics, so feeding them an image-only or text-light page is like handing a customer a blank business card. Try to have at least 100 words of HTML text on your home page, which should incorporate the key terms and phrases by which you want to be found.

Do you use the words by which you want to be found within your own pages? Here's a test: If you have a search engine for your own site, use it to search for your key terms. If you find that your search engine can't find many pages within your site, then there's even less chance that one of the major Webwide services will find your pages by those terms. To solve this, drop the marketing language, be more descriptive and use the words by which you want to be found on pages throughout your site. And use them in HTML text, which search engines read, not in graphics.

Do you have descriptive page titles? Look at some pages within your Web site, and check what text you are using within the HTML title tags. Are you using the same words for every page, or perhaps just placing your company name up there? If so, then you're missing a golden opportunity to attract visitors. Each page should have a title tag that describes what the page is about. Most Web pages usually have a headline in the visible portion for visitors. To help search engines, just make it part of your normal procedure that the HTML title tag matches this page headline.

Are you listed with the Open Directory? This Yahoo-style guide to the Web, run by volunteers, provides data used by several major search engines, such as Netscape Search, AOL Search and Lycos. Go to www.dmoz.org and search for your company name or domain name to find any listings. If you come up with nothing, then find an appropriate category and submit your site.

Are you listed with Yahoo? It remains the king of search engines, and most sites see a noticeable traffic increase once they get in. But getting in can be the hard part. To solve this, Yahoo offers a "Business Express" service for some categories. You pay $199, and they promise to let you know within seven days whether or not you will be listed. There's no guarantee that you will get in, but most sites that use the service are indeed accepted. When you submit, look to see if the Business Express option is offered in addition to standard submission. If so, make use of it. If not, you might look to see if there is another relevant category for your Web site that does offer submission via Business Express.

There's much more you can do to increase your company's presence on search engines. But if you follow these tips, you will take a huge step toward helping users find your Web site.

Sullivan is owner of Calafia Consulting and an industry expert on search engines. He can be reached at www.calafia.com.

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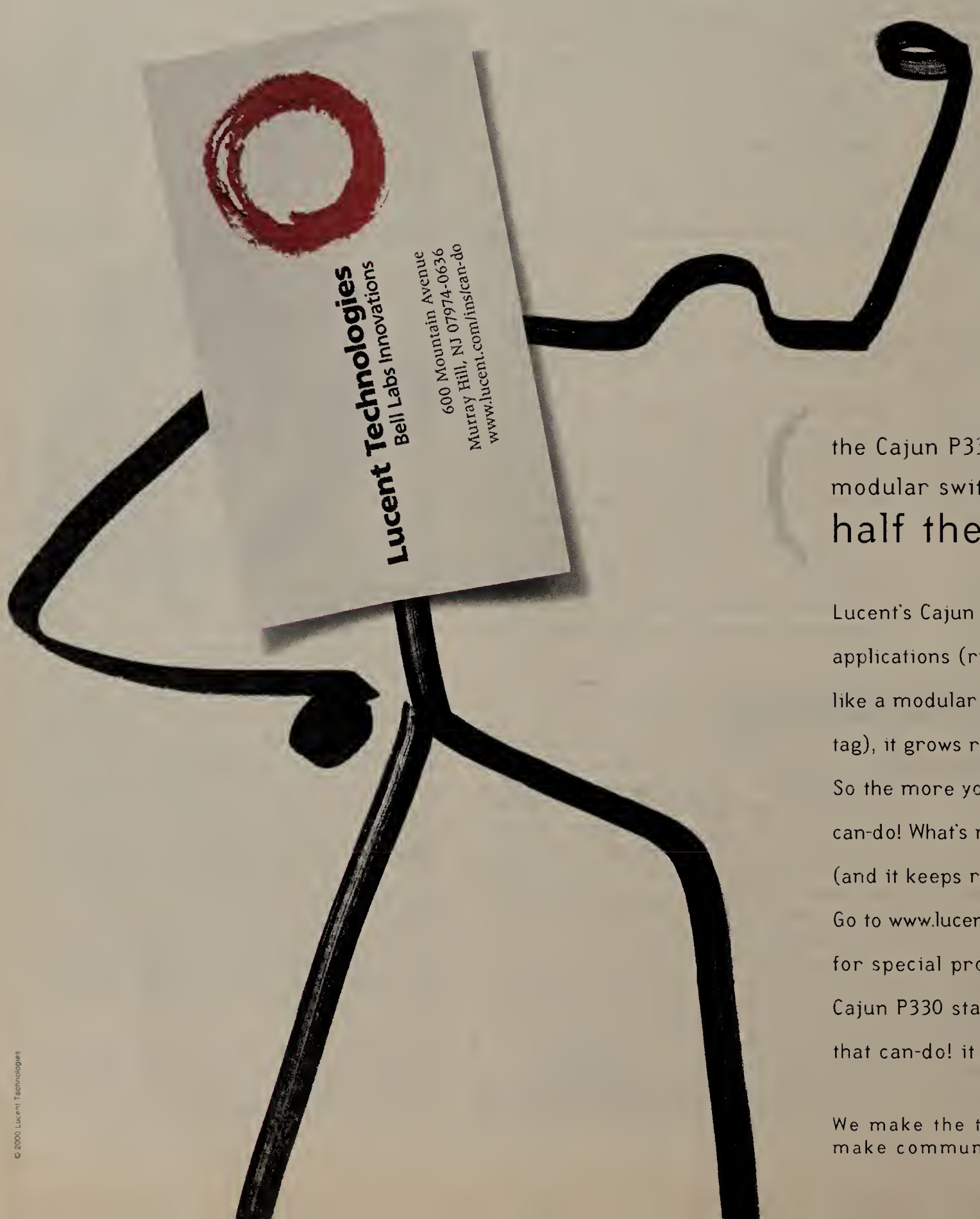

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NetworkWorld BUYER'S GUIDE
Desktop management software

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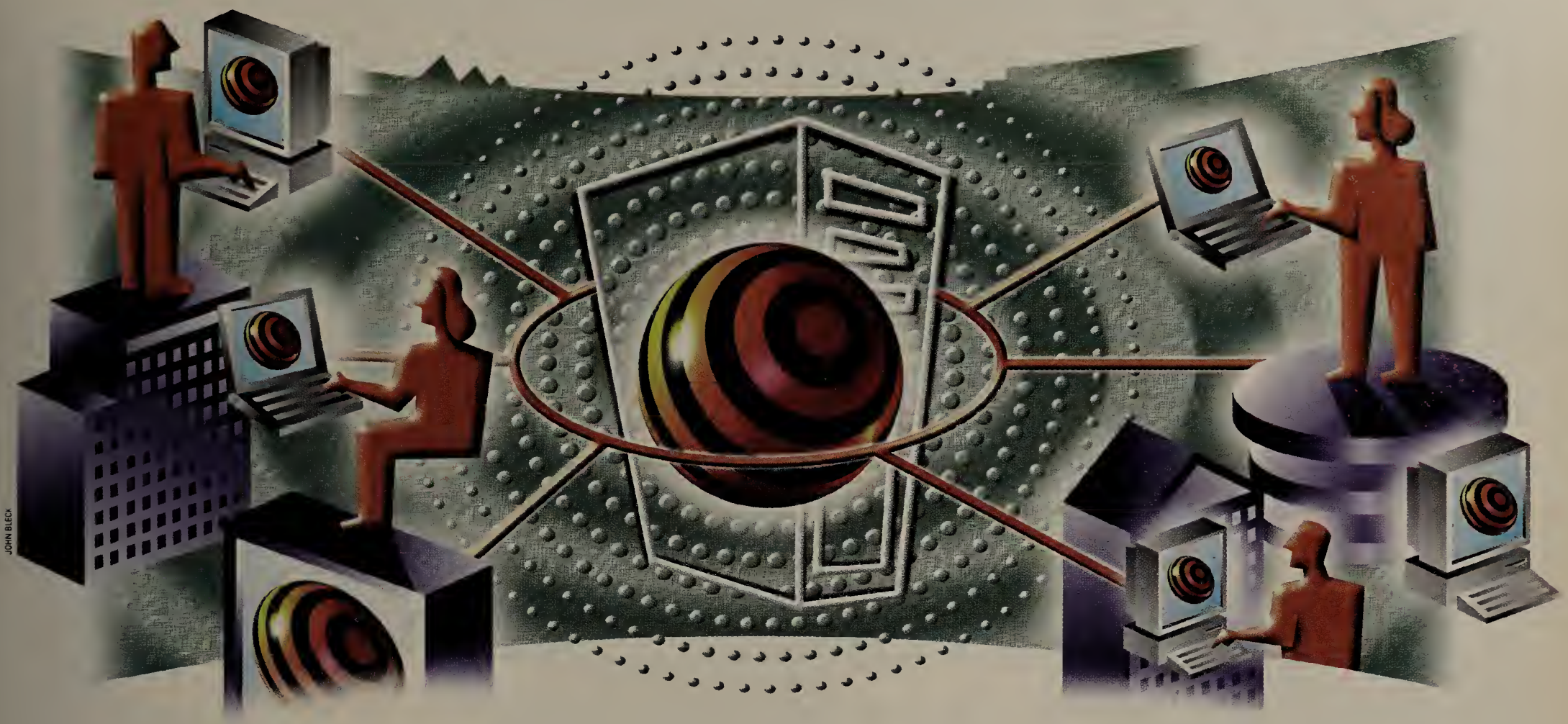

New services extend software distribution, offer application-healing tools and lock-down desktops.

BY SUZANNE GASPAR

Desktop management tools have traditionally gone a long way in alleviating the aches and pains associated with heavy-duty sneaker networking. But the current trend is to extend centralized desktop management's reach into the realm of automated software distribution, application healing and desktop policy management.

Point products, such as Motive Communications' Solo and Novadigm's Radia, and suites of desktop management tools, such as Novell's ZENworks 2.0 and Microsoft's System Management Server (SMS) 2.0, let network administrators use a central management console instead of having to touch all the company's desktops whenever a problem arises. You can now use these tools to push software out to mobile users, remotely heal applications on distributed desktops and set policy-based controls that lock down desktops.

But in spite of these significant gains, there is still no desktop management suite on the market that offers all the administrative features on a network administrator's' growing list. On the other hand, there is good news here: As more desktop hardware and software manufacturers and management tool vendors implement standards such as Lightweight Directory Access Protocol (LDAP), Common Interface Model (CIM) and Desktop Management Interface (DMI), mixing and matching the tools you need to get the job done should soon be possible.

Pushing the software envelope

Improving desktop application quality and availability while reducing support costs is the primary focus of software distribution tools.

In addition to pushing software out to desktops on local networks, administrators can now use products such as Marimba's Castanet and Novadigm's Radia to extend software distribution beyond the firewall in order to support mobile and remote users.

Additionally, an increasing number of vendors are using the built-in capability of browsers to push software updates to customers, who in turn can implement these updates on their own time.

Administrators also need application-healing tools that can be deployed to remote workstations. Healing tools will automatically fix applications corrupted when an end user

Inside

Review: Our Blue Ribbon Award winner in the desktop management suite arena once again is Intel's LANDesk Management Suite 6.3 because it's got great client support, includes bundled antivirus software and is well-rounded in the software distribution and hardware and software inventory tool arenas. LANDesk edged out six other suites in our hands-on testing. **Page 50.**

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- Vector Networks
- Veritas

inadvertently deletes necessary application files. Products on the market that address this area are Motive Communication's Solo and Serena Software's Detect+Resolve Desktop.

These healing tools protect applications in a manner similar to how data is protected by back-up/restore utilities by reimaging application registries and files on workstations across the enterprise from a help desk. Healing tools reduce your total cost of ownership in saved dispatch calls. Unfortunately, no desktop management suite comes equipped with specialized healing software yet.

Another emerging trend is an underlying integration between desktop management and directory services. This integration lets you set one policy for installing or updating software for individuals or groups of users. In a stricter sense, policy management can be used to lock down desktop configurations so users will not be able to load any software onto their machines that is not approved by the network administrator.

Novell's ZENworks suite taps into Novell Directory Services to accomplish policy-based management. Microsoft's desktop management suite, SMS, doesn't offer policy-based management. However, SMS can be used with Windows 2000's IntelliMirror feature, which taps into Active Directory to offer similar functionality.

Counting desktops

Vendors are also starting to offer automated hardware and software inventory services, including the ability to keep tabs on in-house applications. One differentiating factor of inventory management is how these products determine what's sitting out there on all your desktops. ZENworks checks the software signature files in its SQL database and compares those to what is actually installed on the desktops. Other products check the software version information from the desktop itself. The latter provides the most accurate accounting of what is on that desktop.

Having centralized access to detailed inventory data is vital to planning upgrades and application rollouts. This data is often the starting point for many other management tasks, such as dealing with software licensing issues.

Software metering tools use inventory data to help determine patterns of usage. With this knowledge, you can ensure that the right applications are available to the right people and prioritize hardware and software upgrades. Metering also saves you money by ensuring license compliance. Metering software sets the number of concurrent users, allows license sharing across servers, performs queuing of users once the license is exceeded and notifies a user once an application becomes available. SMS, ZENworks, LANDesk Management Suite and DTA all offer metering functions.

Revving up remote control

Remote control software lets network managers or help desk technicians analyze problems on remote workstations and then take control of the client machine to correct the problem. It can also be used to complete routine maintenance tasks such as disk grooming, defragmentation, backups and software updates. HP's DTA is integrated with Symantec's pcAnywhere, which uses minimal bandwidth to offer this remote control functionality. ZENworks, LANDesk Management Suite and Tivoli's IT Director 2.1 also offer remote control functions.

SMS expands on the idea of remote control with a new feature called HealthMon that lets you remotely diagnose Microsoft server problems. With this tool, you can set warning levels and error thresholds for various server applications, services and properties, such as server work queues and security.

While you can't use a single desktop management product to support mobile and remote users, conduct license metering, control desktops remotely, heal applications, lock down desktops and automate inventory, a combination of tools will help you cover your needs and save money. Emerging standards such as LDAP, CIM, XML and DMI will make future desktop management tools interoperate even better. This future integration may eventually enable you to hang up your sneakers for good — or at least let you save them for the gym. ◪

BUILDING A STRONG FOUNDATION

With tools such as inventory, software distribution and license metering, these desktop management suites can help you build a better network.

NetworkWorld REVIEW
Desktop management software

BY TODD COOPEE

Rolling out an enterprisewide desktop management system is similar to building a house. Without a solid foundation and a good understanding of the fundamentals, frustration and problems usually creep in. However, if you can get past the complexity, price, and management challenges, a desktop management suite can give you a centralized set of tools that streamline administrative tasks and reduce the total cost of ownership of desktop systems.

In our recent shakedown of available desktop management systems, we found a class of mature products that embrace new and old industry specifications, such as Desktop Management Interface (DMI) and Web-based Enterprise Management (WBEM). All the products we scrutinized offered hardware and software inventory; desktop configuration and remote control; and software distribution and license metering to a variety of clients. One product dabbled in antivirus protection, as well.

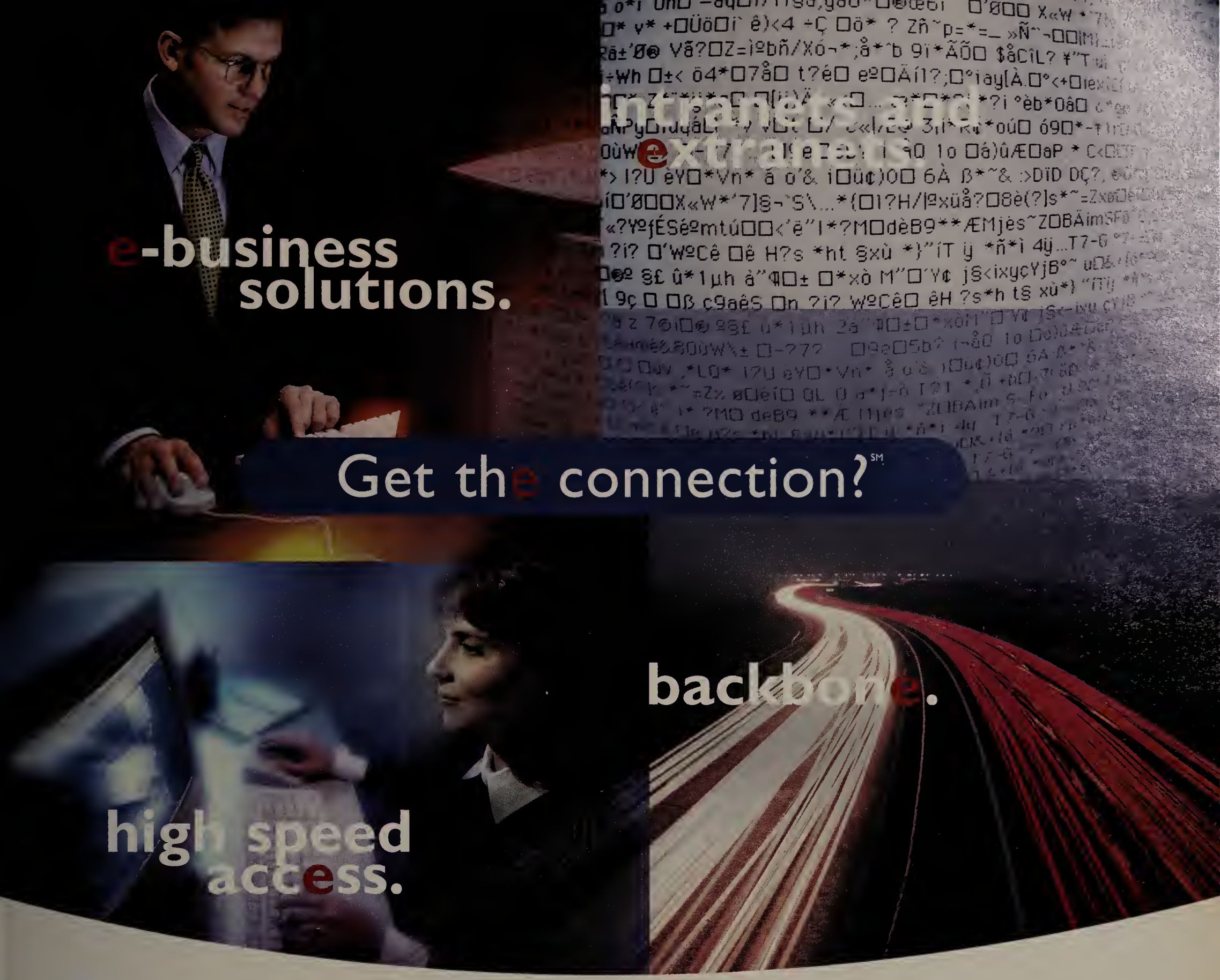
Since our last look at these products in 1998, vendors have packed more useful features into their offerings, but a truly comprehensive product is not available yet. You still have to make some trade-offs and possibly use more than one product to meet all your desktop management needs. And plan to devote a significant chunk of your time integrating your choices into your computing environment.

The seven suites we looked at can handle your basic desktop management chores, but Intel's LANDesk Management Suite 6.3 is once again our Blue Ribbon Award winner. It offers excellent client support, provides antivirus tools and is well-rounded in most of the other categories. The one complaint we have about LANDesk is that it could use some better desktop configuration tools.

Attachmate's NetWizard Plus 4.11 and Veritas

Continued on page 52

JOHN BLEEK



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Continued from page 48

Software's Desktop Management Suite (DMS) 3.5 were right behind LANDesk in our roundup. They are solid options as well, especially if your primary focus is software distribution, a category in which they both excelled in our test. In the software distribution arena, we found DMS to be slightly peppier in performance than NetWizard Plus.

Tivoli's IT Director 2.1 is an adequate, albeit pricey option. The lack of native license metering in the product could be a concern for some shops not willing to invest in a third-party add-on. Novell shops would do well to take a look at ZENworks 2.0, which offers strong inventory and distribution options, but also suffers from a high price tag.

Finally, Microsoft's Systems Management Server (SMS) 2.0 remains an enigma. It is Windows-myopic, which is no surprise, and the most difficult of the packages to get running.

Vector Networks' LANutil32 Suite 5.0 does not truly excel in any one area but holds its own in most categories and, therefore, represents a viable option for budget-conscious sites.

Missing from our list of review participants are Hewlett-Packard's OpenView Desktop Administrator 5.0 and Tally Systems' Cenergy. These products were included in 1998's contest; however, both vendors declined to participate this year.

Setting up shop

Typically, a graphical user interface-based management console installed on a workstation is the primary management interface that controls agents distributed across the network. The console can be a native Windows application, such as Attachmate's NetWizard Plus; a Java console running in a Java Virtual Machine environment, such as Tivoli's IT Director; or a browser-based implementation, such as Intel's LANDesk.

Specialized agent or client software must be installed on each networked workstation. Usually, an agent runs in the background, processing software distribution and other instructions from a management server or console. Older agent software consumed an inordinate amount of CPU cycles to perform even basic functions, but today's client add-ons have been optimized to be better network citizens.

All management data, application logic and security parameters are housed on one or more core management servers equipped with back-end databases. These server engines are the glue that holds a desktop management system together. In most cases, they provide the bulk of the processing power. Large organizations should expect to dedicate more than one system to this task.

The back-end servers of the LANDesk, DMS and NetWizard Plus products stood above the crowd in terms of performance.

Asset management

Maintaining an accurate snapshot of each desktop system in your enterprise is critical to pinpointing potential problems. At a bare minimum, you should be able to view system properties, such as operating system, video adapter, processor, memory and available disk space, as well as attached devices. And you should be able to see each machine's installed software right down to the version level. You should also be able to save hardware and software baselines for each system, allowing you to quickly flag changes to your desktops.

All the products we tested provide hardware and software inventory capabilities that are more than adequate. What distinguishes the products in this cat-

Net Results

LANDesk Management Suite 6.3
Intel
(800) 538-3373
www.intel.com/network/products/landesk_mgmtsuite_v6.htm
$1,000 for 10 nodes; $50,000 for 1,000 nodes.

▲ **Pros**
- Excellent client support.
- Strong event notification options.
- Bundled antivirus utility.
- Wide range of remote control options.
- Best back-end database support.

▼ **Con**
- Limited desktop configuration tools.

Desktop Management Suite 3.5
Veritas Software
(800) 327-2232
www.veritas.com/products/dms
$56 per node up to 50 nodes; $37 per node at 1,000 nodes.

▲ **Pros**
- Offers customizable inventory forms.
- Good reporting tools.
- Sophisticated software distribution options.

▼ **Con**
- No antivirus tools.

NetWizard Plus 4.11
Attachmate
(800) 426-6283
www.attachmate.com
$850 for 10 users; $82,000 for 1,000 users.

▲ **Pros**
- Ships with a software distribution rollback tool.
- Good desktop configuration tools.

▼ **Con**
- No antivirus tools.

ZENworks 2.0
Novell
(800) 453-1267
www.novell.com/products/zenworks/index.html
$295 for 5 users; $5,900 for 100 users.

▲ **Pros**
- Great scripting support.
- License metering tied to NDS.
- Strong desktop configuration tools.

▼ **Con**
- NetWare-centric.

IT Director 2.1
Tivoli
(800) 284-8654
www.tivoli.com/products/index/it-director/
$8,995 for 20 nodes.

▲ **Pros**
- Supports HTML-based reporting.
- Streamlines software package creation.

▼ **Cons**
- No native license metering or antivirus tools.
- Expensive.

System Management Server 2.0
Microsoft
(800) 426-9400
www.microsoft.com/smsmgmt/default.asp
$1,129 for 10 client licenses. An additional $239 for 50 client packs.

▲ **Pros**
- Strong license metering utility.
- Strong desktop configuration tools.

▼ **Cons**
- Substandard documentation.
- Windows-centric.

LANutil32 Suite 5.0
Vector Networks
(800) 330-5035
www.vector-networks.com/lanutil/networkmanagement.htm
$120 per node for 5 seats; $36 per node for 1,000 seats.

▲ **Pros**
- Inexpensive.
- Good reporting tools.

▼ **Cons**
- No licensing tools.
- Requires a proprietary back-end database.

ScoreCard

	Hardware inventory	Software inventory	License metering	Software distribution	Desktop Configuration	Management/ Alerting	Integration	Reporting	Client support	Anti-virus	Remote control	Documentation	Total score
	10%	10%	10%	10%	10%	10%	10%	10%	5%	5%	5%	5%	
LANDesk Management Suite 6.3	9	9	8	8	7	9	8	9	9	8	9	8	**7.60**
Desktop Management Suite 3.5	9	9	7	9	7	7	7	8	7	1	7	8	**6.75**
NetWizard Plus 4.11	8	8	7	8	8	7	8	8	7	1	7	8	**6.55**
ZENworks 2.0	8	8	8	7	8	8	8	7	7	1	7	7	**6.50**
IT Director 2.1	8	8	5	8	7	7	8	8	8	2	7	8	**6.35**
Systems Management Server 2.0	7	7	7	7	8	7	9	7	7	1	8	6	**6.10**
LANutil32 Suite 5.0	7	7	6	6	7	6	7	7	7	1	7	8	**5.75**

egory are the user interfaces and their use of available on-screen real estate. The cleanest and most uncluttered interface belonged to Intel's LANDesk. Tivoli's IT Director was a close second.

We think the customizable inventory forms offered by DMS and LANDesk are a nice touch, allowing you to augment scanned information with manual entries. This duo also offers modules for Web-based inventory reporting, although both modules suffered from sluggish performance.

To support software inventory, most of the products reference cataloged programs against a customizable software dictionary made up of thousands of titles. DMS led the way with a dictionary containing more than 11,000 hardware and software entries. It was relatively easy to create and modify existing dictionary entries in all the packages.

The one exception to the dictionary rule is Microsoft's SMS, which uses its tight integration with Windows to unearth information about installed software instead of using an online information store. In tests of this feature, SMS had difficulty recognizing some applications, such as Visio Corp.'s Visio drawing application, during the inventory process.

All the products use a database to store inventory information. LANDesk provides the most extensive back-end options, with support for IBM's DB2, Oracle 8 and SQL Server. Limited options are found in Novell's ZENworks, which uses a Sybase run-time engine; SMS, which requires you to use SQL Server 6.5 or 7.0; and LANutil32, which uses a proprietary database format.

Despite their database differences, all the products provide good inventory-reporting capabilities. Leading the pack are Veritas' DMS and Vector's LANutil32, which both integrate with Crystal Reports, the run-time for which comes bundled with both products. IT Director's support for HTML reporting is also a bonus, allowing you to scan inventory reports from any standard Web browser. The predefined reports included in ZENworks' reporting tool are functional, albeit a tad inflexible for our liking.

Intel's LANDesk also impressed us with its breadth of client support for all Windows platforms, DOS, OS/2, Macintosh and NetWare servers, including inventory support for Linux systems. While it doesn't provide support for Linux or other Unix flavors, IT Director does include AS/400 client support. Microsoft supports Macintosh systems, but requires that each SMS server on the network be running SMS 1.2 in addition to SMS 2.0, a cumbersome prospect for most sites.

How we did it

All the management consoles we tested, with the exception of Novell's ZENWorks 2.0, were installed on a Dell PowerEdge 2300 server with two 450-MHz Pentium III processors and 512M bytes of RAM running Windows NT Server 4.0 with Service Pack 5. ZENWorks 2.0 was installed on an identical server running NetWare 5 with Support Pack 2 and Novell Directory Services Version 8. The clients in our test bed were 15 Pentium-based Dell workstations running various flavors of Windows (3.1, 95, 98 and NT Workstation) as well as five Macintosh clients running MacOS 8.1. When applicable, we also used a 450-MHz Dell Pentium-III workstation with 128M bytes of RAM running Red Hat Linux.

We installed each product's desktop management console and client agents. To test all the components of each suite, we ran hardware and software inventories of each client and used available reporting tools to examine the results. We also distributed a simple in-house application written in Visual Basic to each of our clients. We then turned our attention toward how each product managed a client's desktop configuration by attempting to change Windows registry entries and distribute system policy information. We also looked at how each product handled license metering by first tracking and then exceeding our license threshold. Finally, we looked at each product's remote control and antivirus tools. From each product's console, we remotely attached to a workstation and attempted to solve a typical problem. Part of our diagnosis involved executing an antivirus tool when applicable.

Blue Ribbon Award

NetworkWorld Blue Ribbon

Product: LANDesk Management Suite 6.3

Vendor: Intel

Helped in large part by its bundled antivirus utility, good administration and reporting tools, Intel's LANDesk wins our Blue Ribbon Award.

Distribution chain

Distributing a software update to a large number of workstations is easily the most tedious task on a system manager's plate. As the workstation count adds up, trudging from system to system, logging on, installing the software and answering user questions quickly becomes a significant chore.

Centralizing and automating the process pays immediate dividends, especially if your network is filled with homogenous systems. Because PC hardware and operating systems differ, running a separate installation routine for each platform/operating system combination reduces your overall time savings.

We found the core software distribution capabilities to be uniform across all the products tested. Each contained a distribution package utility, and several installation options. Customized scripting can also be applied to execute before and after package install across all the products. The degree of scripting capabilities varied from package to package, with Veritas' DMS and Novell's ZENworks providing excellent scripting granularity.

Overall, DMS provides the most sophisticated software distribution capabilities via Veritas' WinINSTALL module. WinINSTALL's many options include distribution via e-mail and through an encrypted NT service. WinINSTALL's excellent installation features include WinINSTALL Program Launcher, which allows you to distribute software on demand.

There were a few other bright spots in the software distribution area. Attachmate's NetWizard Plus includes some nifty fault-tolerant and rollback features. Tivoli's IT Director has product templates that streamline package creation. Every product except LANutil32 offers scheduled distribution and includes a snapshot utility that allows you to create installation packages by recording the pre- and post-installation differences on a clean workstation.

Intel's LANDesk offers a number of push and pull distribution options, including distribution using HTTP. This support lets you easily handle distribution over a slow dial-up connection. IT Director allows distribution nodes to be created on NT File shares and FTP locations, which let you distribute the software to one location and then let users install it at their leisure.

Meter maid

Another fundamental task of desktop management is software metering. By monitoring and controlling what applications users access, you can dramatically reduce your licensing costs and stave off an unexpected visit from the Business Software Alliance.

Most of these suites had good metering capabilities, but two products fell short. Tivoli's IT Director does not provide native metering support, but lets you integrate third-party products, such as ABC Systems & Development's LAN Licenser. Instead of providing active metering, LANutil32 offers license grouping, allowing you to determine which workstations on your network can install a specific application and flagging rogue systems that may have unauthorized software installed.

The remaining products rely on a pool of licenses that can be made available on an as-needed basis. Demand in excess of allocated licenses can be denied outright, passively monitored, allocated to priority users or offered through a first-in/first-out queue. Novell's ZENworks, which takes advantage of Novell Licensing Services and Novell Directory Services, makes it very easy to administer licenses in a NetWare environment. Intel's LANDesk allows you to track Dynamic Link Library files in addition to standard executables. Microsoft's SMS offers license checkout for mobile users and the tracking of usage time for possible charge-back accounting.

Controlling desktops and users

Most of the products offer only limited desktop-configuration management tools.

Attachmate's NetWizard Plus let us manipulate registry entries and enforce system policies on Windows 95, 98 and NT systems. However, we had to install NetWizard's Remote Registry Service on each system to make that happen. SMS countered with support for propagating user profiles and enforcing logon restrictions across all Windows clients. ZENworks offers printer management and extensible

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system policies for controlling who can use specific printing resources and how a desktop can be changed.

All the products tested except LANutil32 offer some form of remote control capability for viewing and controlling workstations. NetWizard Plus, LANDesk, SMS and ZENworks all let you transfer files, directly edit resident files and interactively chat with end users. SMS takes remote control a step further by offering remote diagnostics and the ability to force client reboots. LANDesk offers the widest variety of remote client control, with support for Windows, OS/2 and Macintosh clients, and NetWare servers. DMS delivers the goods by throwing in a bundled version of Funk Software's Proxy remote control program.

Surprisingly, the only product to bundle full antivirus support is LANDesk. LANDesk's virus detection tool is a version of the Norton AntiVirus client for Windows desktops. To protect servers and other clients, you'll need to use the Norton AntiVirus Corporate edition, at an additional cost. Unfortunately, the virus threat is glossed over by the other products, except Tivoli's IT Director and Novell's ZENworks, which provide integration options with other third-party products.

Novell bundles a 6-month subscription to Network Associates antivirus software.

Notable events

All the products provide some degree of event notification — for example, alerting you that a remote installation of software failed or that a license threshold has been exceeded, usually in the form of an alert box or an entry in a system log file. Intel's LANDesk leads the pack in this area, offering a bundle of alert actions. Depending on the event, you can initiate an e-mail message, load a NetWare Loadable Module, generate an SNMP trap or send a message to a pager. ZENworks also provides integrated help desk support, allowing you to automatically generate a trouble ticket for any detected desktop problems.

To gain some semblance of control over your desktop environment, you'll need to endure the long, drawn-out installation procedure inherent in this class of products. We advise plenty of advance planning as well as a thorough review of the software's documentation.

Unfortunately, in some cases, rifling through the documentation can be as confusing and complicated as the products themselves. Tivoli's IT Director, Intel's LANDesk, Attachmate's NetWizard Plus and Vector's LANutil32 all offered adequate manuals. Novell's ZENworks relied primarily on online documentation, which was also passable. Some of the pointers to documentation on the Tivoli Web site generated JavaScript errors in our browsers. The Microsoft SMS manual seemed comprehensive on the surface, but we often had to turn to alternative documentation offerings, such as online help or the Microsoft Web site, to clarify a problem or feature.

After completing our testing, we concluded that there is no perfect desktop management solution. Your decision should be guided by the features that are of most importance to your organization. However, we recommend beginning your search by giving Intel's LANDesk Management Suite serious consideration.

Coopee is the technical director at Industrial Media, a consultancy in Ottawa. He can be reached at tcoopee@industrialmedia.ca.

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TOO MUCH INFORMATION

New cross-referencing system helps network security vendors describe problems in similar terms.

BY DEBORAH RADCLIFF

Research is a large part of Gerry Zepp's job as corporate security director for Comstar.net, a business ISP in Atlanta. Every day, he logs on to the Internet to keep abreast of the latest and greatest security vulnerabilities. He visits Carnegie Mellon's Computer Emergency Response Team (CERT) site and reads advisories, then bops over to Internet Security Systems' Xforce alert page. He also receives numerous Bugtraq mailing lists and other security vendor mailings. But all too often, his search ends in frustration.

For example, Finjan, a mobile-code security vendor, might say that a vulnerability is a Java or ActiveX code problem, while Internet Security Systems will describe the same vulnerability as a back door into the network. "It's a real pain because there's no single point where you can find the right material," Zepp says. "The language is different everywhere."

Take a remote monitoring tool like Back Orifice or NetBus. Virus protection firms describe these threats as viruses, but they're really back doors. "You need a solid background in security to understand two different versions of the same exploit," Zepp says.

Steve Christey used to grapple with the same problem as he assessed security for engineering services firm Mitre's 12,000-node network.

"We'd find 600 vulnerabilities when we used one product, but 230 vulnerabilities when we used another. We couldn't deconflict the Tower of Babel," says Peter Tasker, executive director of Mitre's security and information operation division in Bedford, Mass.

But a few months ago, Christey found a solution. He launched Common Vulnerabilities and Exposures (CVE), a cross-referencing system that will hopefully result in a single, common description for each vulnerability.

Already, CVE has drafted common descriptors for 320 potential risks — everything from buffer overflows in Network File System to denial of service in Internet Explorer 4. Every entry gets a number for cross referencing. And this is what companies, Bugtraq list servers, CERT and others will cross-reference their material to.

So far, 11 vendors and 16 security-related groups have bought into CVE. Purdue University's Center for Education and Research in Information Assurance and Security and Security Focus' sites are already CVE-searchable, meaning their alerts reference CVE identification numbers.

In addition, the participating vendors are working on the CVE editorial board, spearheaded by Mitre's Christey, to define and number the vulnerabilities. For example, Internet Security Systems' XForce database of vulnerabilities provided some of the earliest descriptors for CVE.

Christey has the final word on the descriptors, then adds them to the CVE database. Once in the database, vendors will provide links to the CVE descriptors. And as new vulnerabilities arise, the same process will repeat itself.

CVE is not intended to replace vendor alerts, Bugtraq mailing lists, CERT advisories and the like. It only exists to ensure referencing is easier for folks like Zepp. While CVE doesn't provide patches, each vulnerability in the CVE database includes links to patches and updates.

Chris Williams, senior manager of security research for security tool vendor Network Associates in Santa Clara, sees CVE as a win-win situation for vendors and security professionals.

"So many of these new exploits cross boundaries that it makes defining their nature very difficult," Williams says. "I've done vulnerability assessment work myself. You have to be a genius to figure out what the priorities are when you have more than one vendor's tool in your tool box."

As CVE catches on, expect to see more companies, Bugtraq mailing lists and discussion groups link to the CVE database.

Zepp is already a convert. As president of security services start-up Inprise Security Group in Atlanta, he's been looking for somewhere to send clients for answers after he assesses their networks. "With something like CVE, I can point them to a single place where they can get common explanations of what they're dealing with. I'd use it."

Radcliff is a freelance writer in northern California. She can be reached at derad@aol.com.

SENSITIVITY ABOUT SEMANTICS

What's in a name? Plenty, according to Peter Tasker, executive director of Mitre's security and information operation division. After all, defining security vulnerabilities associated with leading software requires diplomacy, especially by a third-party company like Mitre.

"We've been very careful because there are a lot of players out there, and we want to respect their roles," he says.

Thus, the CVE editorial board coined a new security term: "Exposure."

The group has yet to distinguish between "vulnerability" and "exposure," but the general thought is that if a service behaves as it should and it's still vulnerable to exploitation, it should be called a "vulnerability." The term "exposure" may, in the future, refer to broader, security-related concerns.

— Deborah Radcliff

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VALUABLE RESOURCES

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LAYER 4 SWITCH SUMMIT

Vendors agree to a preliminary set of benchmarks, but more work needs to be done.

BY NEAL WEINBERG

When it comes to testing Layer 2 and Layer 3 switches, there's widespread agreement that throughput is the key benchmark. But simply counting packets per second doesn't cut it when it comes to the new breed of Layer 4 switches.

These products, known as Web switches, e-commerce switches or content-aware switches, are typically targeted at a specific function, such as load balancing. What separates Layer 4/7 switches from Layer 2/3 switches is the ability to look inside packets and make sophisticated forwarding decisions based on information contained in the HTTP header.

Currently, there is no standard benchmark or agreed-upon set of metrics to help network executives get a handle on the performance of these products. And there is no single test tool that can simulate the real-world Internet traffic flows needed to run these switches through their paces.

In an effort to rectify the situation, The Tolly Group and *Network World* recently invited switch vendors and test tool makers to a two-day conclave on the New Jersey shore.

Attendees included representatives from switch/load balancing/cache vendors Alteon WebSystems, ArrowPoint Communications, Cabletron, F5Labs, Foundry Networks, Lucent, Radware, Holontech, InfoLibria and iPivot/Intel. The testing community was represented by Ganymede Software, Netcom Systems and the National Laboratory for Applied Network Resources. NLANR's Web Polygraph tool is widely accepted as the benchmark for testing cache products, but it doesn't yet have a test tool for Layer 4 load-balancing switches.

The vendors checked their competitive instincts at the door — and during sessions led by Kevin Tolly, president and CEO of The Tolly Group, and *Network World* Editorial Director John Gallant — came to agreement on a number of key issues.

Probably the most significant agreement was that the baseline benchmark for Layer 4 switches should not be packets per second, but transactions per second, with a single transaction consisting of a request and a response.

"Testing a Web switch requires a new approach," said Ervin Johnson, director of technical and product marketing at ArrowPoint. The important metric is the time it takes for a client to make a request and for a Web server to respond to that request.

The group agreed on these other key metrics:

- The number of HTTP connections per second the switch is able to set up.
- The number of concurrent connections the switch can handle.
- The error rate, or the rate of transaction requests that aren't completed.

The group also agreed that because the true test of a switch is the ability to recognize and then properly forward different types of traffic, a proper test needs to send a workload through the switch that closely resembles real-world traffic. And that's not easy when it comes to Web traffic thanks to a number of different variables.

The group decided to create a baseline Web site scenario that looks like this:

- 100% of the traffic is HTTP Version 1.1.
- The mean file size is 10K bytes.
- The median file size is 3.5K bytes.
- The maximum number of persistent connections is 64.
- The maximum number of simultaneous connections per client is four.
- The number of client IP addresses per hour is 64,000.
- The number of virtual IP addresses is 32.
- The number of real IP addresses equals the number of server ports.
- The percentage of malicious traffic is zero.
- The percentage of encrypted traffic is 5%.

The idea was that these would represent the defaults on "dials" that could be turned up or down depending on the requirements of a particular test.

The group also divided the Layer 4 switch market into three categories and determined which metrics were most important in each. The categories were:

- Web site hosts and ISPs.
- Individual e-commerce sites.
- Enterprise networks.

The enterprise would typically have a single router link to the Internet, limited numbers of source IP addresses and multiple types of traffic, representing various corporate applications.

A Web site hosting company or an ISP would have multiple router uplinks, large numbers of virtual IP and source IP addresses; would require denial-of-service protection; and would need significant connection capacity.

An e-commerce site would be concerned with redundancy, encryption, server-to-server transactions and ensuring that the load-balancing switches created persistent connections with potential customers.

MYRON LEVINE

The switch vendors and test tool makers checked their competitive instincts at the door during the two-day session and agreed on several key metrics.

While the vendors accomplished a lot during the meeting, there is still work to be done. "The true measure of the meeting's success will be if any uniform benchmark gets implemented," Tolly says. "The onus is now on vendors and test tool companies to coordinate any such uniform benchmarking effort."

For network executives, this means it might be appropriate to ask a Layer 4 switch vendor how its switch stacks up against these key metrics and to ask the vendor what role it is playing in the benchmarking effort. ◩

TOP ISPs

Network World has teamed with Visual Networks (www.visualnetworks.com) to bring you the first in a series of quarterly reports on the top ISPs in the market.

Through statistical analysis of Visual's Internet BenchMark data (see How We Did It), we ranked the top ISPs in the business-to-business, national and regional ISP markets. In addition, we've tracked results since August 1999 to show whether an ISP's ranking has spiked for one month or is consistent.

In December 1999, AT&T WorldNet came out on top, performing above average in six out of nine categories tested. Coming in a close second is BellSouth, which performed above average in five out of nine categories.

QUICK TIP

Visual's Internet BenchMark provides a standard way to compare the overall performance of dial-based ISPs. But the performance experienced by specific users may vary based on many factors, including the type of equipment, dialing locations and the level of service purchased from the ISP.

Many companies are turning to service-level agreements (SLA) to ensure that their users are receiving the quality of service promised by the ISP. But how can users measure the day-to-day service-level metrics, such as availability or response time, negotiated from their ISPs?

Systems and tools that let enterprises and ISPs measure service levels, and manage IP connectivity and applications are typically referred to as service-level management (SLM) systems. These systems offer tool sets that define, monitor, and administer SLAs.

Data collected from an end user's point of view can be presented in a collaborative fashion, in which ISPs use SLM systems to monitor performance on dial-up and dedicated Internet circuits, and then share the performance data with their customers.

DECEMBER 1999'S TOP ISPs

ISP	Score*	Strengths
AT&T WorldNet	18	Low CFR %** (all three categories), initial modem connect speed, average time to log on, low Web fail/timeout %
BellSouth	17	Low CFR % (evening), initial modem connect speed, average DNS lookup time, average Web throughput, average download time
Bell Atlantic – North	15	Initial modem connect speed, average DNS lookup time, low Web fail/timeout %
UUNET (GridNet)	15	Initial modem connect speed, average time to log on, average DNS lookup time
MindSpring	14	Initial modem connect speed, average time to log on
Ameritech	13	Average time to log on
AT&T GNS	13	Initial modem connect speed
Concentric	13	Average download time
EarthLink	13	Low Web fail/timeout %

*(12 = average) **(CFR = call failure rate)

MONTH-TO-MONTH COMPARISON

ISP	Aug.	Sept.	Oct.	Nov.	Dec.
AT&T WorldNet	14	15	13	14	18
BellSouth	12	13	13	14	17
Bell Atlantic – North	19	12	14	13	15
UUNET (GridNet)	12	13	12	13	15
MindSpring	10	13	14	14	14
Ameritech	13	14	13	13	13
AT&T GNS	14	13	18	14	13
Concentric	12	15	10	13	13
EarthLink	12	12	15	15	13

INDUSTRY AVERAGES FOR DECEMBER 1999

Category	National retail	Regional retail	Business-to-business
24-hour CFR %	4.8	3.6	4.3
Evening-hour CFR %	7.6	5.1	5.4
Business-hour CFR %	5.5	4.8	5.3
Initial modem connect speed (Kbps)	46.85	45.18	46.63
Average time to logon (seconds)	29.30	32.45	31.76
Average DNS lookup time (msec)	533.42	461.52	454.06
Average Web throughput (Kbps)	4.10	4.17	4.27
Average download time (seconds)	23.01	25.25	24.91
Average total Web fail/timeout %	3	3	3

TOP ISPs BY CATEGORY

BUSINESS-TO-BUSINESS

ISP	Score
UUNET (GridNet)	15
AT&T GNS	13
Concentric	13
ICG-NetAhead	12
PSINet	12

NATIONAL RETAIL

ISP	Score
AT&T WorldNet	18
MindSpring	14
EarthLink	13
Juno	12
MSN	12

REGIONAL RETAIL

ISP	Score
BellSouth	17
BellAtlantic – North	15
Ameritech	13
Pacific Bell	12
SBIS	11
US West	11

HOW WE DID IT

The data for this report comes from Visual Networks. Through its Internet BenchMark data, Visual rates national, regional and business-to-business ISPs according to several factors, including call failure rate, modem connect speed and Web download performance.

We took the raw data from Visual and applied statistical analysis to rate the relative performance of each ISP. First, we derived the standard deviation of the numbers in each performance category. Standard deviation is a measure of how far the numbers in a series diverge from each other.

For each category in which an ISP performed better than one standard deviation from the industry mean, we awarded it one point. If the ISP did better than two standard deviations from the mean, we awarded it two points.

Similarly, if an ISP did worse than the industry mean by more than one standard deviation, we took a point away from its score. If it did significantly worse, meaning two or more standard deviations, we took away two points. We started with a baseline of 12 points, so if an ISP scored 0 points it ended up with an adjusted score of 12.

After scoring each category, we summed the results to produce a single number that indicates the reliability and performance of each ISP.

A rating of 12 means an ISP was about even with its peers, or the industry average. In December 1999, 10 ISPs scored higher than 12, making them eligible for our list of the best national ISPs. The bad news, however, is that 11 ISPs scored less than 12 points.

A complete list of the national ISPs tested appears on Network World Fusion (www.nwfusion.com).

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Management Strategies

Career Development, Project Management, Business Justification

Career climbing

Network professionals who don't want to get roped into management jobs still have ample career opportunities.

BY TONY KONTZER

Daniel Kloetsch served time in the management ranks, but he didn't exactly savor the experience. While it's been several years since he returned to the trenches, he vividly remembers the lessons he learned.

"What that taught me was that it was not what I wanted to do," says Kloetsch, a principal engineer for Egghead.com in Menlo Park, Calif. "It took me away from the technology."

Kloetsch is part of a growing population of network professionals who prefer not to manage people, even if that means turning down promotions.

Instead, he and others like him long to stay close to the technologies that attracted them to IT in the first place. And because many of the rules for building an IT career have changed as much as the technologies themselves, such a goal is wholly obtainable.

"In the old days, the only way to make more money was to move up into management," says Patti Wilson, a counselor at the Career Action Center in Palo Alto. "That's not the current model."

Wilson says nonmanagement IT professionals are viewed with increasing importance in the emerging Internet economy, in large part because IT is no longer seen as simply a cost center of a large company. There are more opportunities than ever for IT professionals to get in on the ground floor, building intranets and network infrastructures for midsize companies and even start-ups.

Daniel Kloetsch of Egghead.com says every day you spend in management will take you further away from technology.

KATHLEEN KING

In the case of Kloetsch, the decision to pass on frequent offers to move into management is a snap thanks to the unpleasant experience he had as a director with his previous employer. It also hasn't hurt that Egghead.com last year transferred what had been a brick-and-mortar retail business entirely onto the Web, and then subsequently merged with Onsale.com. Those two moves have led to an avalanche of technical needs in maintaining the vast site.

The way Kloetsch sees it, transitioning IT employees into management roles may not even be a good idea in the first place. "The natural tendency is to draw your engineers into management," he says. "But you lose a resource. You do the company a disservice."

No one would agree more than Franklin Lerum, a manager of distributed systems who works with Kloetsch. Apart from the fact that he's seen many people make the jump only to find disappointment, Lerum says seasoned IT pros are a treasured commodity.

"They're very valuable because of their depth of knowledge," he says. "They're living it. They see the trends. And they can serve as a mentor to more junior employees."

Ironically, Kloetsch says that IT workers who hope to steer clear of the management path should actually give it a try first — meetings and politics and all.

"When you get the opportunity, you should take it and find out what it's like," he says. "But know that every day you spend in management will take you further away from the technology."

JoAnne Shanahan sees things a bit differently: Every day in management would take her further away from her family. Shanahan, a part-time systems administrator for San Francisco architectural firm Gensler, is a mother of two who has consciously avoided advancing her career in order to spend more time with her children.

It's not that she hasn't had opportunities to move upward. Shanahan has been with Gensler for 20 years, the last eight in IT. Her boss, vice president of IS Bruce Bartolf, says he's long wished that she'd be willing to take on a larger role in the company.

No dice, says Shanahan. She's thought about taking steps — such as obtaining various types of certification — that would lead to more money and responsibility, but she always reaches the same conclusion.

"I really like what I'm doing. I like the challenges, but my family's more important," she says. Besides, "I'm not the type of person who likes to play the game."

In this job market, network staffers clearly have more control over their careers than ever before. And those who possess the hottest skills may even carry more weight than their management counterparts.

"I don't think people need to move into management," says the Career Action Center's Wilson. "Unless they tend toward masochism."

Kontzer is a freelance writer in San Jose. He can be reached at tony@goodink.com.

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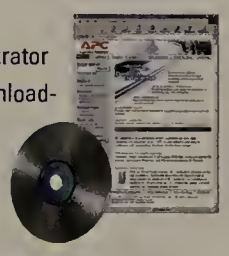

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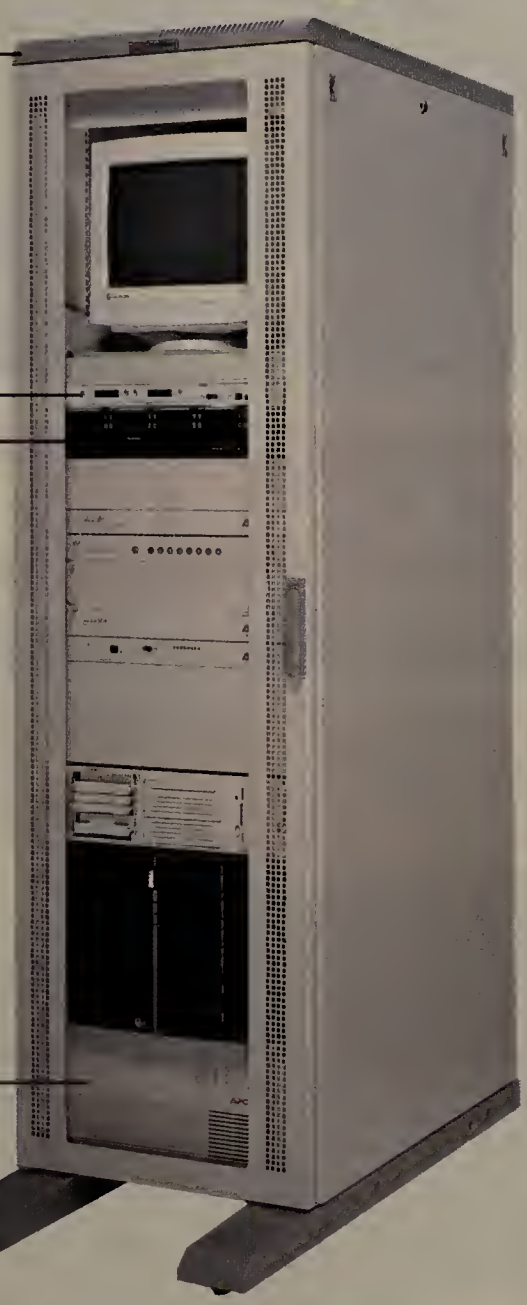

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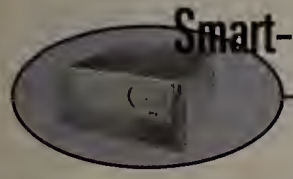

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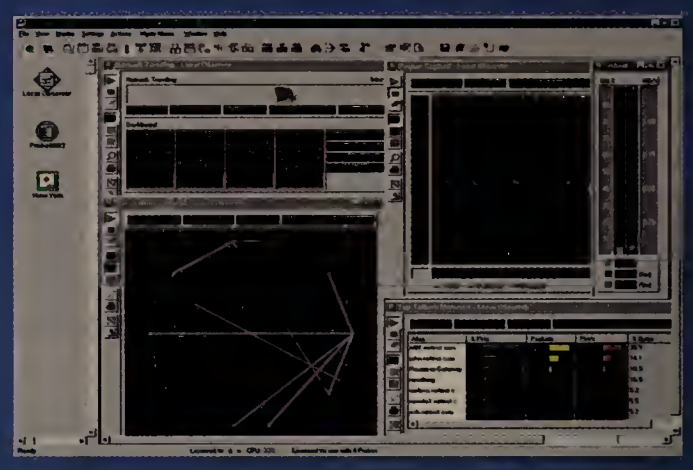

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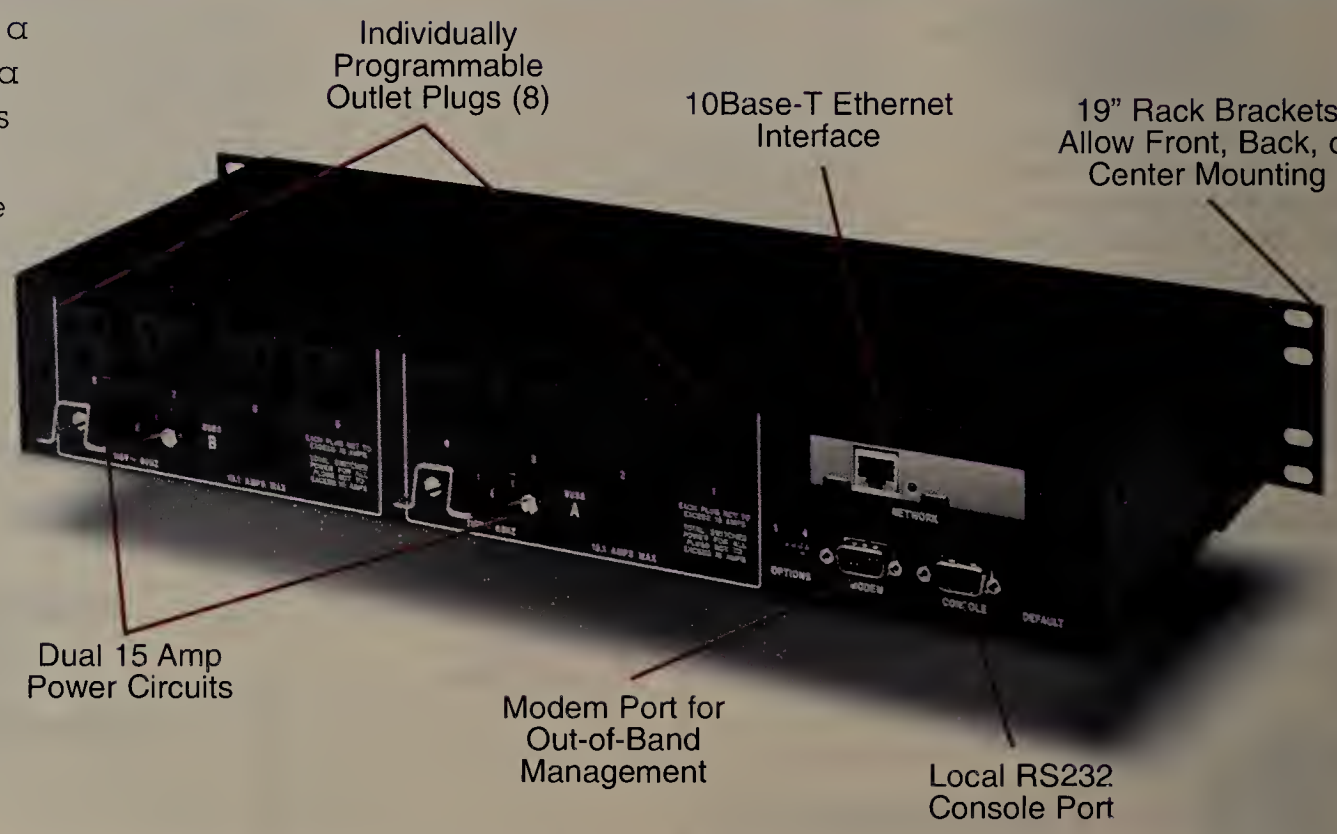

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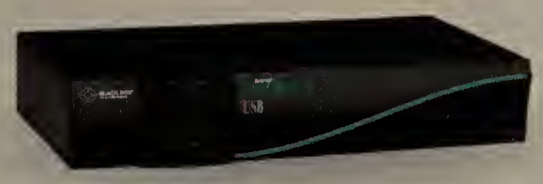

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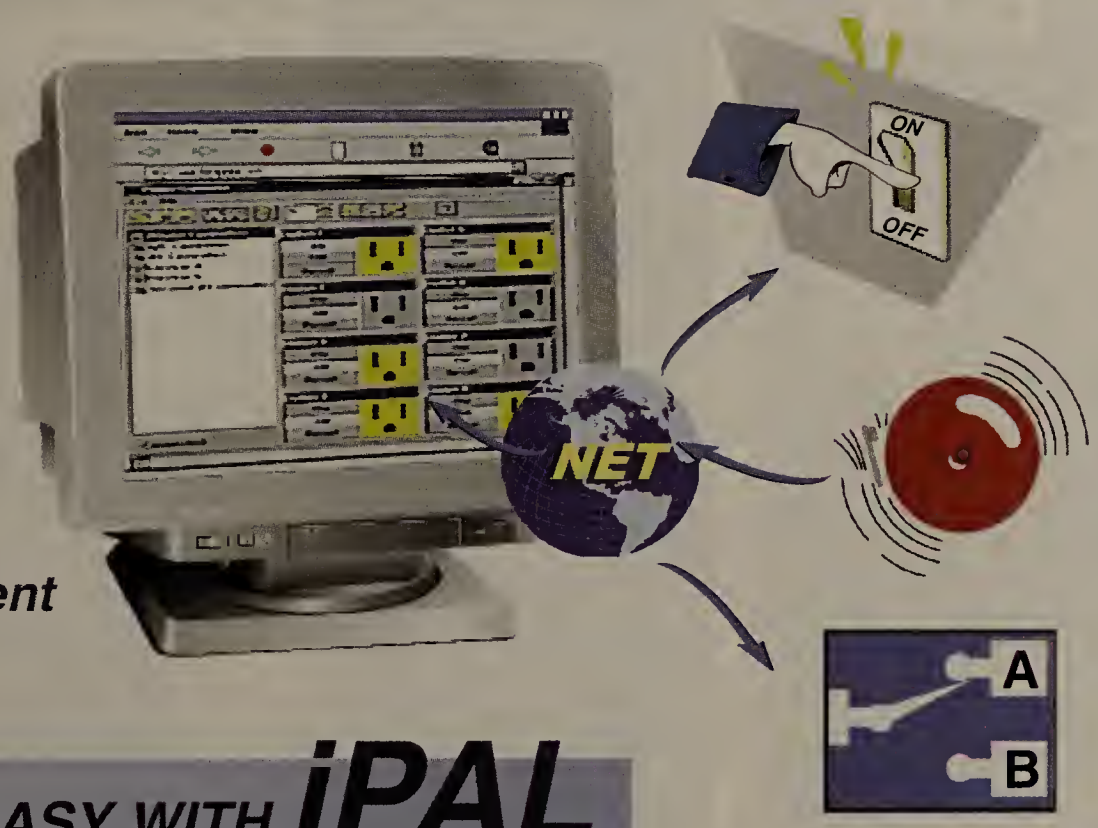

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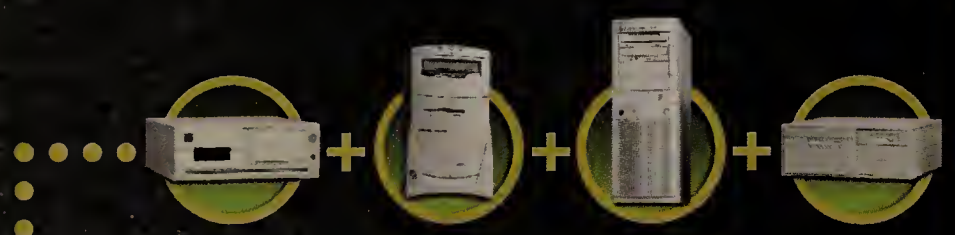

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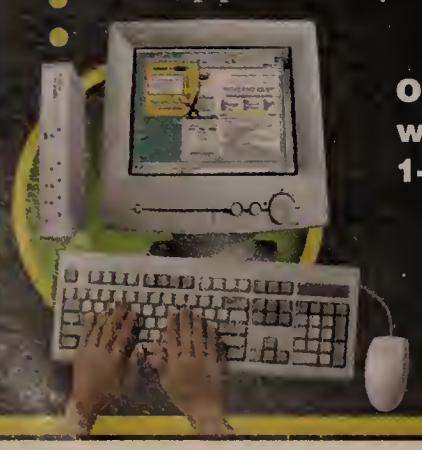

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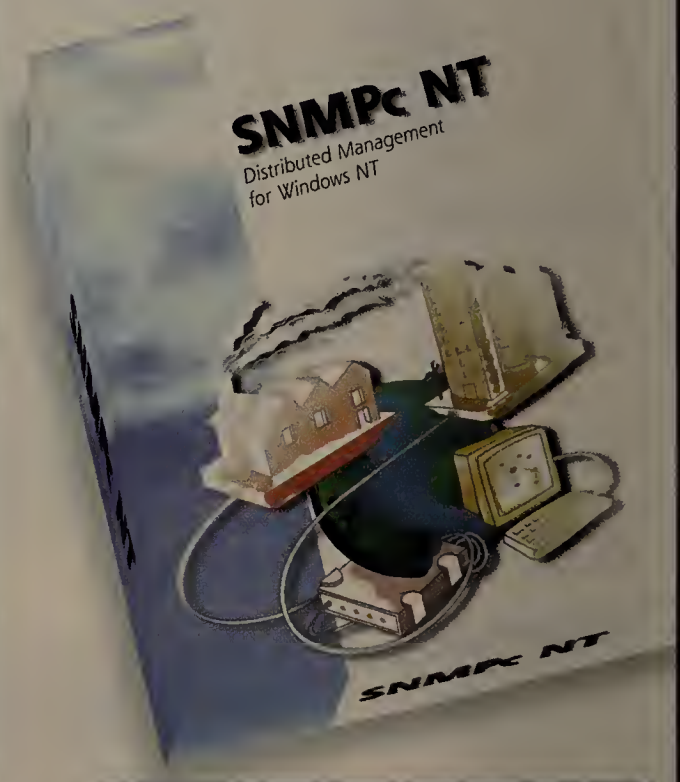

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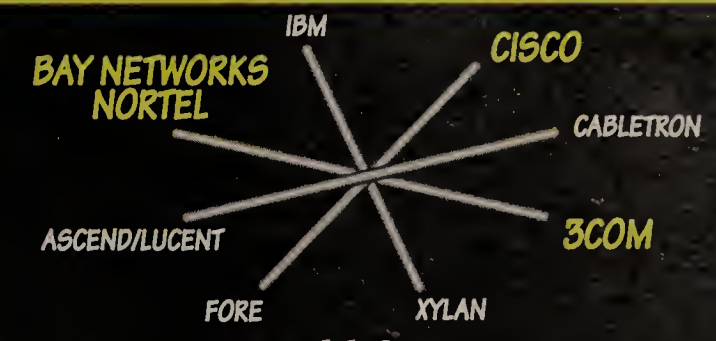

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- Unix OS, and familiarity with Shell programming
- Oracle or other popular RDBMS
- Administration and trouble-shooting experience of networks such as IP, ATM etc.
- Possessions of certifications in networking areas will be an added advantage.

Software Developers: 3 to 5 years of experience in Software development with the following skill set to work as part of our development team:
- Strong C/C++ programming background in Unix or Win32 environment
- Good knowledge of TCP/IP programming
- Knowledge of other telecommunication protocols such as SS7, ISDN PRI etc. would be an added advantage

Human Resources Manager: 5 to 8 years of experience in the software industry with experience in following key areas:
- Working with Business Managers and developing human resource requirements
- Planning and performing recruitment activities
- Formulating human resource policies

Please specify in your resume the category you are applying for.
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Fundtech Corporation
157 Technology Parkway, Suite 100
Norcross, Georgia 30092

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Software Engineer: Maintain & enhance Encoder software & hardware, a complex realtime machine control hardware & software developed in C/C++ under Windows NT/Windows 95, which digitizes analog video into MPEG2 digital video; Oualify the stability, functionality & video/audio quality of new encoding hardware; Develop other Windows NT C++ complex software & hardware systems to enhance digital & insertion system; Evaluate, recommend & help partners & customers to use 3rd party software ad hardware package related to encoding or playback of digital & analog video material. 40 hrs/wk, $67,500/yr. Requires Masters Degree in Computer Science, Computer Engineering or Systems Science, 6 months experience developing complex s/w packages in realtime system & machine control, Graphics User Interface, & Visula C++ (exp may be concurrent w/Masters); Demonstrated knowledge of developing software components in RS 232 communication protocol, ISA/PCI board programming, distributed system, TCP/IP and multiple threading. Must be US citizen, permanent or lawful temporary resident, refugee or asylee. Send 2 resumes to Job Order 19982841 P.O. Box 8968, Boston, MA 02114.

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(Burlington, MA) Write automatic tests and perform systems test functions on software and hardware for IP/ATM (Internet Protocols/Asynchronous Transfer Mode) Telecommunication/Networking products. Review and modify systems architecture, features and requirements as required. Evaluate tests, equipment and software tools. $71, 052/yr, 40hrs/wk, Mon.-Fri. 8:00A.M. - 5:00P.M. REQD: Bachelors in Communications or Electronics Engineering and 5 yrs exp in job offered or 5 yrs exp in Computer Engineering any field. Experience to include internet Protocols (IP), routing and ATM switching, network design, UNIX and C. Send resume in duplicate to: Case # **19982813, P.O. Box # 8968, Boston, MA 02114**

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Manhattan, NY

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Sr. Software Engineer: Analyze, dsgn & implmt comp applics & prgms using C, C++, & Visual Basic under Win NT & Unix. Implmt network connectivity & communication using signals & sockets over TCP/IP connections & Comp Telephony Integration (CTI). Dsgn & implmt complex dbase structures incl Oracle in a distributed envrmt. Reqs MSCS & 2 yrs exp dsgng/dvlpg s/ware applics. Demonstrated knowl of C, C++, Visual Basic, Win NT; use of signals & sockets over TCP/IP, CTI; Oracle, PL/SOL package, procedures & dbase tables in a distributed envrmt & Unix. 40hrs/wk. $68K/yr. Send 2 copies of resume to case#19983036, PO Box 8968, Boston, MA 02114.

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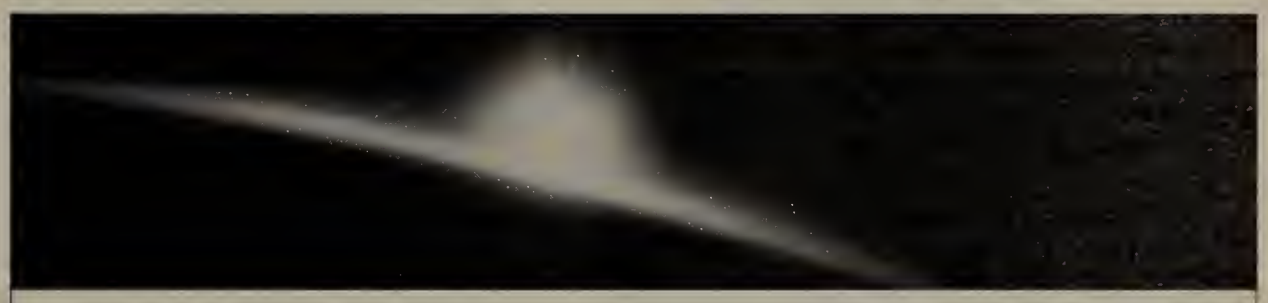

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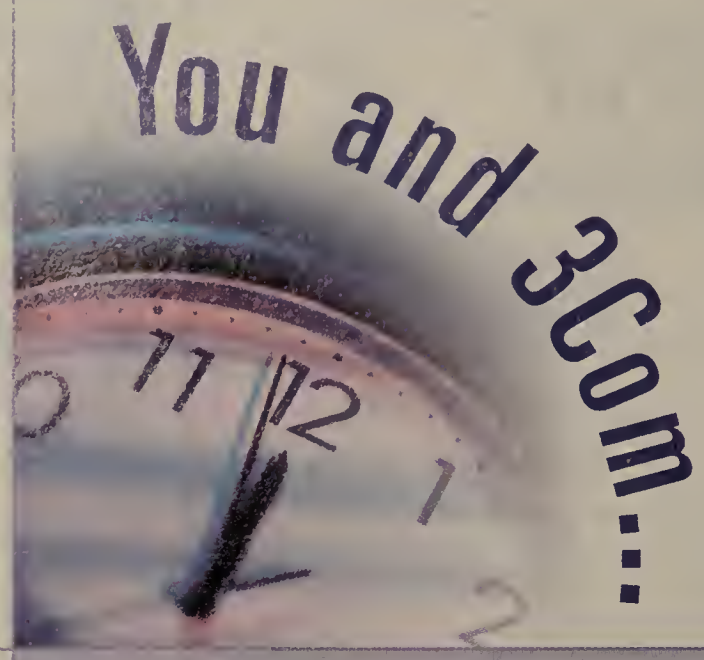

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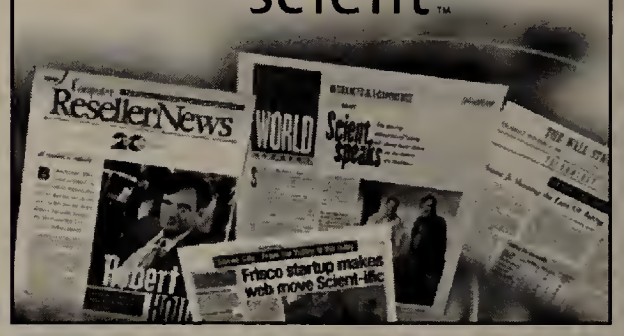

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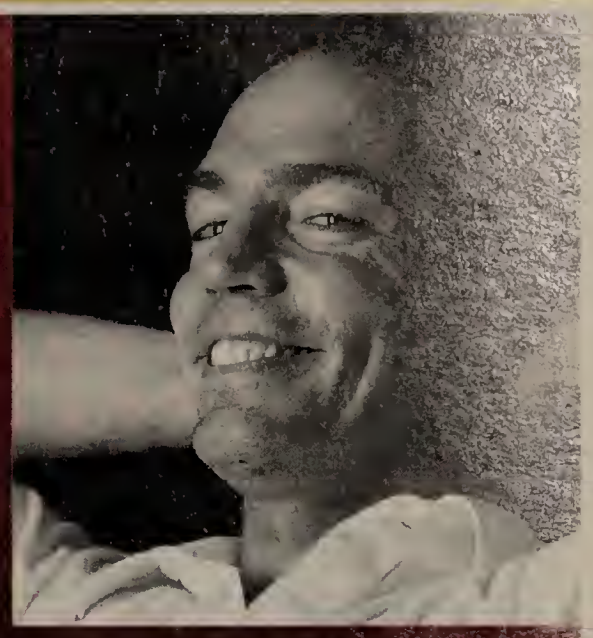

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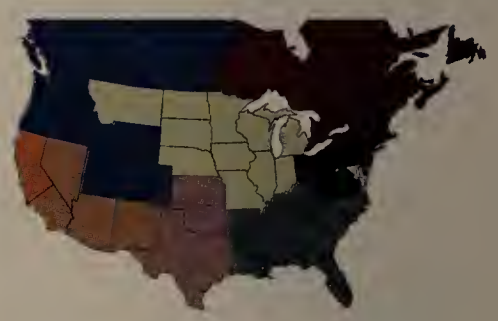

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LinuxWorld,
continued from page 1

code, which was developed by Intel and leading Linux vendors over the past nine months.

The Trillian participants, led by VA Linux Systems, have been very secretive at the insistence of Intel, but the so-called development release of Trillian will finally give Linux hackers a chance to evaluate the code. It also will be the

LINUXWORLD CONFERENCE & EXPO

first time Linux creator Linus Torvalds, who will deliver the opening keynote, has seen the code. Torvalds is expected to add Trillian to the base Linux kernel in the near future.

"The 64-bit platform will be very important to Linux in the server market," says one source who requested anonymity. "It is Intel's platform of the future and will help Linux compete against Sun and Microsoft."

With that in mind, some observers are expecting this to be the first LinuxWorld that is clearly aimed at an enterprise customer audience. Clustered Linux will be a hot topic, including software from TurboLinux for creating clusters that can be built with a mixture of operating systems from Sun Solaris to Windows NT.

IBM will release a free set of Linux server specifications that allow for thin-client computing, and Red Hat Software will debut software for embedded systems.

The new 2.4 Linux kernel will not make its anticipated appearance but is likely to create a stir with its promised performance features for large users. Those features include file system journaling that will help speed server reboots, improved symmetrical multiprocessing support, memory support for 36-bit addressing for IA-32 architectures and plug-and-play support.

Torvalds is expected to release the kernel on Feb. 17 as a jab at Microsoft's Windows 2000, which hits the shelves the same day.

But that might be the only jab taken all week as the Linux community tries to preserve its one-for-all mantra.

"This gathering will be more of a lovefest than a competitive battle. These guys know that if Linux fractures they lose," says Dan Kusnetzky, an analyst with International Data Corp. in Framingham, Mass.

And with this year's conference just a short cab ride from Wall Street, the show will likely have a fair amount of suits scattered among the dressed-down Linux faithful.

While Linux stalwarts Caldera Systems and LinuxCare are hunkered down in IPO-mandated quiet periods, Wall Street wizards will be prowling for other gems among the nearly 800 vendor booths.

"This will be the LinuxWorld where Wall Street and Madison Avenue advertisers show up to see if this stuff is real," says Larry Augustin, CEO of VA Linux Systems, a darling on Wall Street after its wildly successful IPO late last year.

What will be real is Trillian. The project began last April to tweak the Linux kernel to support Intel's IA-64 Itanium processor.

"I would like to run this chip for obvious reasons — performance," says Rudy Pawul, systems analyst for ISO New England, which manages New England's power grid. "I don't need it for file serving or Web servers, but it would be nice to run an Oracle database on 64-bit."

Trillian will add a variety of enterprise features, such as symmetric multiprocessing, clustering, large memory, large file systems and performance monitoring. It also is backward-compatible with IA-32.

But some observers downplay the importance of Trillian, especially because Linux for 64-bit Alpha is already available.

"The large memory of 64-bit will be nice for database applications, but the apps that currently run on Linux don't need 64-bit," says Bill Claybrook, an analyst with Aberdeen Group in Boston.

While Trillian presents the large end of the Linux spectrum, Red Hat and IBM will be thinking small in New York.

"We will provide software to get Internet devices — thin servers, point of sale terminals, digital set-top boxes — up and running with Linux," says Michael Tiemann, chief technology officer of Red Hat. The embedded systems software was developed using Code Fusion IDE tools from Cygnus, which Red Hat acquired last year. The news comes on the heels of Red Hat's announcement last week that it will package Computer Associates management tools with its Linux Enterprise Edition.

> ***"This will be the LinuxWorld where Wall Street and Madison Avenue advertisers show up to see if this stuff is real."***
>
> Larry Augustin, CEO, VA Linux Systems

IBM will release specifications that define how Linux servers can be modified to serve thin-client applications to the IBM Network Station 2200 and 2800. The free specifications support Red Hat 6.1, but other Linux flavors will be added, according to IBM officials.

In the clustering realm, TurboLinux will unveil enFuzion, which allows different operating systems to be clustered into a supercomputer, similar to a Beowulf architecture. The difference is enFuzion doesn't require dedicated boxes for clustering and allows clusters to be made up of any combination of servers or desktops running Solaris, Windows NT, HP-UX, IBM AIX, SGI Irix, Tru64 and Linux platforms. Users can distribute computing-intensive operations over any number of machines in their enterprise.

"We're targeting the enterprise big boys that need to do some serious computing," says Aaron McKee, product manager for enFuzion. Organizations such as J.P. Morgan and Argon National Labs are testing the software, which is slated to ship in March.

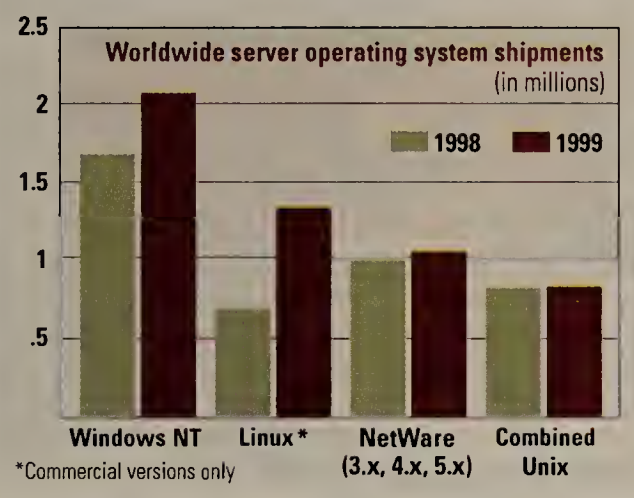
VA Linux is expected to release Version 2.0 of its client/server VA Cluster Management. The new features let users manage an unlimited number of nodes in a Linux cluster over the Internet, remotely monitor specific server components and upgrade firmware remotely.

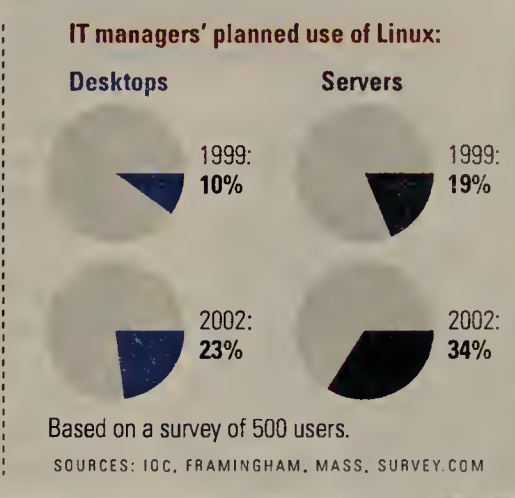
Also at the show:

- LinuxCare is expected to unveil a Web-based technical support program.
- Progressive Systems will unveil its Phoenix Adaptive Firewall Appliance, a single-function network server.
- Lantronix will release a no-cost utility called Rtel that allows printers to be networked in a Linux environment.
- Interstar Technologies will unveil LightningFax 6.1 for Linux, a network fax server.

Catching the Linux buzz

Linux's recent strides in the marketplace and its projected growth in enterprise networks have contributed to the buzz around the open source operating system.





SOURCES: IOC, FRAMINGHAM, MASS. SURVEY.COM

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... check out *Network World's* big Linux Showdown.

NetworkWorld SHOWDOWN Linux distributions

What: A presidential-style debate featuring representatives from five key Linux suppliers.

Who: Vendor panelists: Larry Augustin, CEO, VA Linux; Robert Bruce, CEO, Walnut Creek CDROM; Ransom Love, CEO, Caldera; Cliff Miller, CEO, TurboLinux; and Dirk Hohndel, CTO, SuSE. Expert panelists: Bob Brown, news editor, *Network World;* April Jacobs, senior writer, *Network World;* and Nick Petreley, editorial director, *LinuxWorld.* Moderator: John Gallant, editorial director, *Network World.*

Where: Special Events Hall, Jacob Javits Center at LinuxWorld Conference & Expo in New York.

When: 4:15 p.m. to 5:30 p.m., Wednesday, Feb. 2

AT&T finally manages frame relay voice

BY DAVID ROHDE

WASHINGTON, D.C. — It's official: You no longer have to hide from AT&T the fact that you're using its frame relay network to place long-distance telephone calls. In fact, now the carrier will help you do it.

The carrier last week announced AT&T Managed Multi-Service Networking, a service that feeds on-net voice traffic through Motorola frame relay-based multiservice access devices deployed on customer premises onto the AT&T frame network.

Users pay normal frame relay charges plus $200 to $600 per month, per site for AT&T management of the service via the Motorola customer premises equipment (CPE). In return, they no longer have to pay per-minute tolls to AT&T for on-net long-distance service.

The announcement had been expected for several months after AT&T quietly began demonstrating the service at user-group meetings and trade shows (*NW,* May 17, 1999, Page 1).

Managed Multi-Service Networking is technically not the first AT&T service that breaks the historic bugaboo holding back the king of long-distance from offering a service that "cannibalizes" its own installed base of circuit-switched toll traffic. But it is the first such service to be commercially available over a widely deployed AT&T data network — frame relay.

In addition, because Managed Multi-Service Networking uses frame relay access devices that have long been employed in multiprotocol frame relay networks, it also supports mixed-protocol data environments as well as IP.

AT&T in 1999 launched a comprehensive convergence service called Integrated Network Connection Service, but that offering is based on ATM CPE. AT&T is also conducting a limited enterprise voice-over-IP trial over its Internet backbone.

Managed Multi-Service Networking was just one of a barrage of managed services unveiled by AT&T at ComNet 2000. Among the others were AT&T Managed LAN Utility, which offers LAN hardware, maintenance, asset buyback, fault management, design and implementation in one package.

Although the service is offered by AT&T, the initial version is largely a rebranding of Cabletron's GlobalNetwork Technology Services, an initiative launched by the equipment vendor last year to manage multivendor environments for customers with scarce capital or management resources.

Users will be charged only for the ports they use at a rate of "under $50" per active port, per month, according to AT&T.

AT&T also announced a server-monitoring service that provides continuous remote monitoring and proactive notification of specified service outages and events. Additionally, it introduced a managed ATM service that supports pure ATM enterprise nets, mixed WANs that employ frame relay-to-ATM interworking and inverse multiplexing over ATM. ◪

ASP,
continued from page 1

customers might be easier to convince if the upstart ASPs can point out that their application-hosting infrastructures are actually being provided by the likes of AT&T and IBM.

AT&T, at ComNet 2000, introduced its Ecosystem for ASPs, a set of network and hosting services for ASPs and independent software vendors. AT&T has teamed with a slew of vendors to create an application-hosting environment as well as content distribution and storage management services that will enable ASPs to meet a wide variety of customer needs.

IBM, which is among the vendors working with AT&T, separately proclaimed at its IBM Partner World conference in San Diego that it wants to be a supplier to the whole ASP industry. IBM is offering hosting services as well as providing ASPs with a lab where they can build and test applications. IBM also plans to finance some ASPs and offer professional marketing services.

AT&T and IBM's announcements further validate the application-hosting concept, which is still relatively new and unproven, says Tom Jenkins, senior consultant at TeleChoice, a consulting firm in Boston. Sprint, UUNET, Sun, Hewlett-Packard, Microsoft, Oracle and Intel are among the other big names that have embraced the ASP market, which Forrester Research in Cambridge, Mass., predicts will generate more than $11 billion in revenue by 2003.

With a market that big to attack, it's no wonder that AT&T plans to invest $250 million over the next few years to build hosting facilities that ASPs can use to deliver services.

Today AT&T has five such data centers up and running, and the carrier plans to have 26 more in operation by the end of next year. These data centers will host corporate applications and Web servers, with equipment supplied by AT&T partners such as Cisco, EMC, HP, InfoLibria, Inktomi, Novell and Sun.

"Data centers will be the next generation central offices," says Kathleen Earley, president of AT&T's data and Internet services.

She expects the data centers to be the birthplaces of a new generation of integrated voice and data applications and services. Earley also says AT&T is working with its partners, such as Cisco, to create technology that will enable ASPs and their customers to monitor the quality and performance of AT&T's network and services.

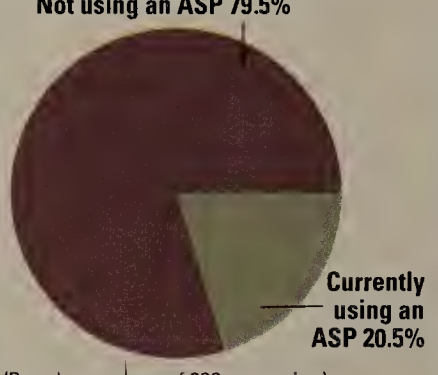
Stephen Elliot, a senior analyst at Gartner Group, says having an association with AT&T won't hurt ASPs.

"Let's face it, AT&T has one of the strongest brand names in the world," Elliot says.

But AT&T does not plan to become an ASP itself, Earley says. "We are not application experts," she says.

ASP predictions

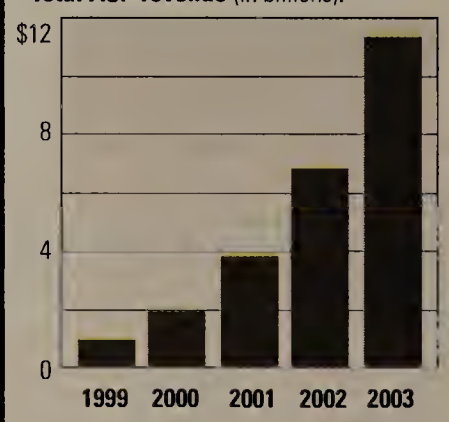
Although only one-fifth of U.S. companies are currently using ASPs . . .



(Based on a survey of 288 companies.)

. . . analysts predict that the ASP market will take off in the next several years.

Total ASP revenue (in billions):



SOURCES: *NETWORK WORLD* ASP READER SURVEY, FORRESTER RESEARCH, CAMBRIDGE, MASS.

IBM's ASP plan

IBM, meanwhile, is trying to cover all the ASP bases. The company actually acts as an ASP in offering WebSphere Web applications, but IBM officials last week emphasized that the company is more interested in helping other ASPs deliver services than in being an ASP itself. The company hopes to have up to 100 ASPs using its services by year-end.

"The role we're trying to play in the ASP world is principally selling to companies that want to be ASPs," says Steve Mills, general manager of IBM's software solutions group. "We'll sell hardware, software and services expertise to help make businesses successful."

For example, IBM has a program called ASP Prime designed to help software developers get their applications ready for delivery in an ASP format. IBM's Tivoli subsidiary offers the Net Generation Initiative, which provides software management technologies for companies that want to build and deliver ASP services. Lotus, another IBM subsidiary, offers an ASP Performance Solution Pack for ASPs to use to run collaborative sessions with their customers.

Already firmly established in Web hosting, IBM offers additional services through its ASP Hosting Advantage program. IBM is able to host applications for ASPs and their customers at its massive Schaumburg, Ill., data center, and soon plans to open data centers in Raleigh, N.C., and Boulder, Colo., to handle what IBM expects will be greatly increasing demand. IBM currently has 40,000 servers (from IBM and others) available for hosting services. On a contractual basis, IBM offers billing, security, licensing and management services to ASPs.

Analysts say that while IBM's and AT&T's increased involvement in the ASP market is sure to fuel growth, they also expect that some ASPs may view the big vendors less as potential partners and more as eventual threats to their businesses.

But at least for now, some ASPs are willing to give IBM and AT&T a chance. In fact, AT&T last week named a handful of ASPs that are using its Ecosystem services, and claims that it is already working with up to 100 ASPs.

Users surveyed say they like the idea of AT&T and IBM getting into the ASP infrastructure business, but still would not automatically go with an ASP just because its infrastructure is supplied by AT&T or IBM. Despite the fact that these companies have huge installed customer bases and significant network and computing resources, their resources are not 100% reliable, says Sim Wright, coordinator of information technology at BMW Manufacturing in Spartanburg, S.C., which is looking into outsourcing some applications. ◪

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Survey
continued from page 1

E-commerce promises to be an especially potent force for change. Two years from now, companies surveyed expect e-commerce to bring in an average of 41% of their total revenue, and they'll be dedicating an average of $83 million per year to their e-commerce efforts, the survey indicates.

Interviews with network executives support the findings.

"We've got a major thrust into e-commerce," says Mike Ackermann, manager of network planning and design at Blue Cross/Blue Shield of Michigan. "I don't think our precise strategy has solidified, but we have dedicated a lot of resources — personnel, finances and otherwise."

The Network World 500 survey polled 500 network professionals and covered topics ranging from network operating systems (NOS) and wireless networks to network management. The results paint a picture of what networks may look like in a few years.

The convergence of voice and video on data networks figures prominently for many companies. About 57% of respondents said convergence makes sense in LANs and WANs; another 17% said it makes sense in just WANs; and 11% said it makes sense in just LANs. Only 13% said convergence doesn't make sense in either network.

More than 80% of respondents believed convergence will reduce operational and infrastructure costs.

Nevertheless, many companies aren't quite there yet.

"We've been gearing up our networks to accommodate streaming video," says Dennis Butcher, network consultant at oil company Atlantic Richfield in Los Angeles. But his voice network is likely to remain separate for some time. "We've enjoyed not having any issues with our PBXs," he says.

IP is it

IP is the best protocol for voice to travel over, according to 42% of respondents. Another 35% preferred ATM, and 9% opted for frame relay.

IP's popularity is also reflected in the responses concerning VPNs. VPNs are already used by 42% of those surveyed, and another 36% said they will use VPNs within two years. In fact, 58% said it's at least "somewhat likely" that VPN services will supply all their organizations' remote access needs in three years.

The network professionals we surveyed generally looked favorably on Windows NT and Active Directory. For e-commerce servers, 70% of respondents said they are using or will use NT, while 59% said the same about Unix operating systems. When asked what NOSes are installed at their organizations, 93% said NT, 71% said Unix, and 57% said NetWare.

However, NT runs neck-and-neck with Unix operating systems as the NOS in which respondents have the most confidence. About 39% chose NT, compared with 38% for the various types of Unix and 15% for NetWare.

NT's niche

Some see NT as a fit for specific applications.

"I still don't think Windows NT is to the point where I'd want to run my Web site on it," says Brent Ayers, director of engineering and operations at Holiday Channel, which provides ways to let users shop for gifts online.

In the future, Ayers says he'd feel more comfortable using a free, open source operating system such as Linux, in conjunction with Apache Web server software.

Still, he acknowledges that NT works well for the company's internal applications.

Despite the fact that Active Directory has yet to ship with Windows 2000, it already has users' attention.

About 36% of respondents said they plan to implement Active Directory in the next 12 months, compared with 20% for Novell Directory Services.

Other highlights of the survey:

In network management, respondents valued the basics. We asked them to rate different management capabilities, and troubleshooting and event notification came out on top, with 92% calling the capability "important" or "very important."

More concerns

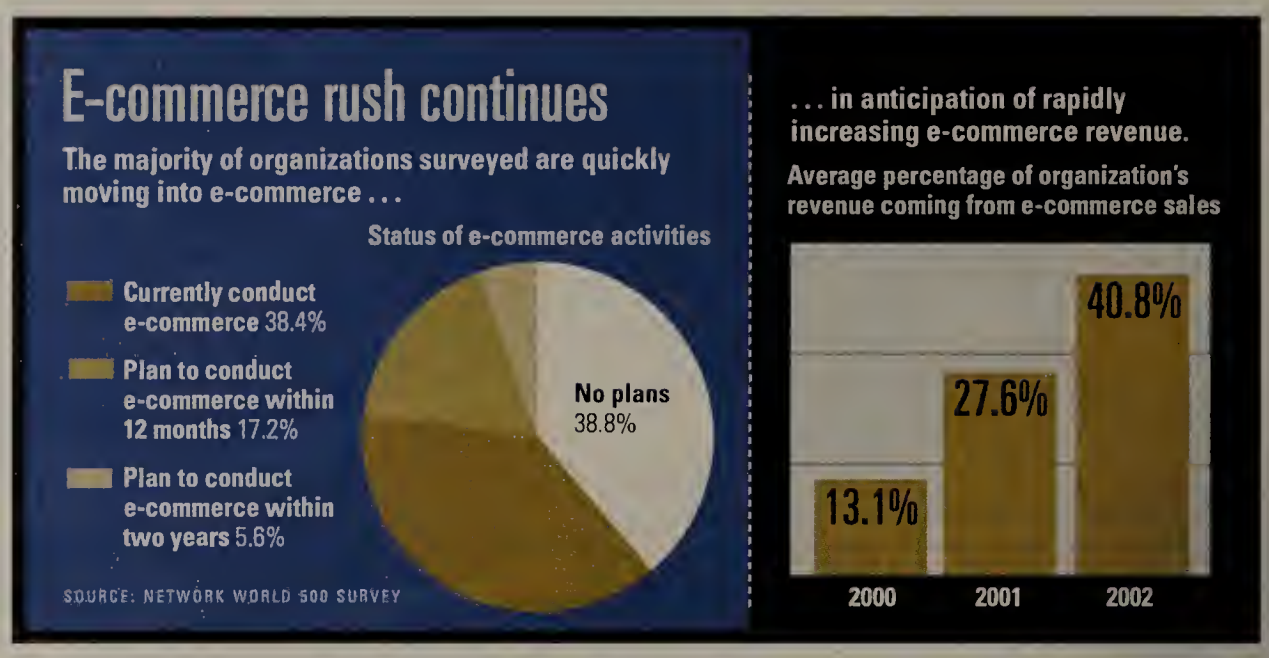
Other top concerns among respondents are storage management and the comparison of performance against service-level agreements. At the bottom of the list are software distribution and asset/change management.

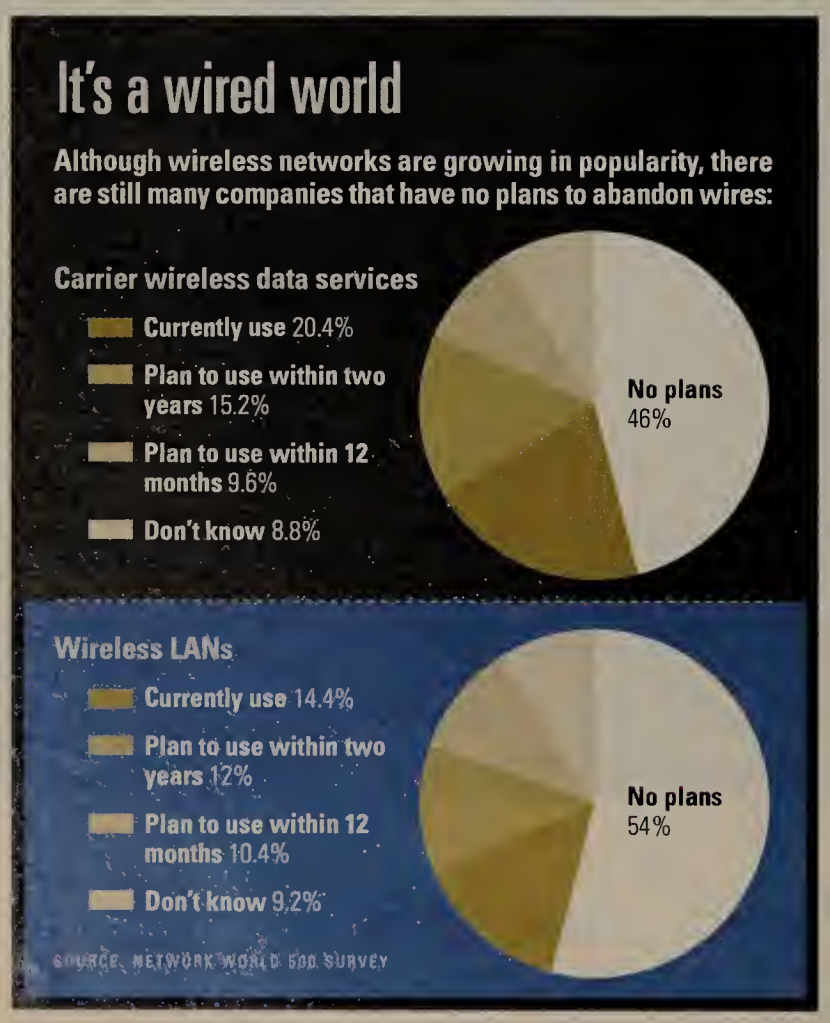
Handheld devices will become more important in the workplace, according to the survey. About 51% said they will purchase handheld devices for employees within the next 12 months, and another 10% will support employee device purchases.

The time for wireless networks hasn't quite arrived. More than half of those surveyed said they have no plans to use wireless LANs (see graphic, bottom left).

Network professionals continue to be in extraordinarily high demand. About 24% of those surveyed said it's "difficult" to find qualified technical personnel, and another 38% said it's "very difficult."

The most telling statistic may be this: Fully half of those surveyed said they have received five or more calls from companies or headhunters about job opportunities in the past 12 months. ◪





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Backspin

Winning and losing

"Winning is a habit. Unfortunately, so is losing."

— Vince Lombardi

MARK GIBBS

Winning at anything changes everything. It confers strength, validates and creates opinion. But winning at, say, basketball, is not the same as winning the Miss America Pageant (a fabulously silly competition, but work with me here folks).

In basketball, winning is about who is faster, who has more skill and who is a better athlete. In short, it is definitive. Yes, I know you can argue about the referee's calls, but you have to admit that most matches are fairly judged.

But Miss America ("she's studying to be a veterinarian and wants to work for world peace and split the atom") is a silly win. It is one beauty against another, and may the best legs win. Ridiculous.

What happens when Miss Rhode Island (the former Miss Plumbing) loses? She is crushed because she was judged on subjective criteria and she didn't measure up. What cruelty, what a blow (I'm actually being serious).

"Winning is not everything. It's the only thing." — Vanderbilt coach "Red" Sanders.

Now, I just read "King of the NOS hill" by John Bass and James Robinson in last week's *Network World*. A good solid piece of research, but I have a problem with the underlying philosophy. That philosophy, a common computer industry one, is that it is meaningful to say that one product in an area as complex as network operating systems is better than another, even though the winner is only marginally better and the judgment highly subjective.

Before any of you who know my feelings about NetWare and Windows even think of suggesting that I'm piqued because NetWare came in second to Windows 2000, let me say that I think Windows 2000 is a fine piece of code (and from what I've seen, a big improvement over previous Windows releases).

But my complaint is that these sorts of comparisons are fundamentally misleading. Even though you, dear reader, are more than smart enough to know that the authors' conclusions are biased from their experiences and that your own mileage may vary, it is still the case that when an august journal declares "a winner," one's perception is subtly — but powerfully — altered. It is hard not to take such accolades seriously even though the winning margin might have been razor thin.

For example, as my evil twin Gearhead noted last week, if you scan the press, you'll find that the opinion of most product reviewers is that it is sayonara to Windows CE and long live PalmOS. While Palm devices have garnered the lion's share of the market, I doubt whether that is because the Palm is a better machine than its competition.

Back to the NOS comparison. These kinds of reviews are good for feature cataloging, but testing always has its limits. In the case of NOSes, there is one attribute that never gets reviewed because it is so hard to evaluate in a lab: stability. Products in the lab never really appear as they do "in the wild."

Take any product and test it outside of real-world conditions and what have you got? Sure, there's going to be some useful data and some valuable insights, but not true facts. For that, you need to survey the market and establish real-world performance — for new market entrants such as Windows 2000 that is an impossible goal.

So, despite Windows 2000 winning, it is patently the fact that the win, as is the case with any win where hugely complex products are being evaluated, is artificial.

I have a request: Can we have product reviews that don't try to find a winner? Let's just provide enough data to make judgments, and let's let the network managers pick their own winners.

Champions to mwcolumn@gibbs.com.

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

Experts predict the presidential election cycle that began last week in earnest (an Iowa farm town so small that its name contains no capital letters) will be history's last without official voting over the Internet.

Those experts will probably be proven correct, of course, which would be an awful e-shame. Just because something *can* be done over the Internet, doesn't mean it should. And choosing government leaders — be they national, state or local — shouldn't be done over the Internet.

Why might an Internet columnist, of all people, hold such an opinion?

Because there's far too much potential downside for far too little potential gain, unless you happen to be an executive whose company stands to benefit from the advent of Internet voting, or a politician who wants to appear technologically hip by supporting the notion. A gabfest on the issue in Washington, D.C., last week featured cheerleading from the likes of **Jim Adler,** founder of **VoteHere.net, Cisco CEO John Chambers** and **California Gov. Gray Davis.** They are typical of the self-interested parties driving the Internet-voting movement at the moment, and may well carry the day before those who should know better even find their voices.

The case for Internet voting boils down to this: People don't vote because they don't have the time or can't get to the polls. Make voting easier and more people will vote. If more people vote, we'll get a better class of elected official.

Well, you can feed that slop to the hogs in earnest, Iowa.

People are not staying away from the polls in ever-larger droves because getting to them is too difficult or time-consuming. They are not voting because they simply do not care to participate in the process, whether out of apathy, laziness, ignorance, disgust with today's politics, or some combination thereof.

Internet voting will change none of that.

As for the shut-ins and traveling businesspeople who genuinely want to vote but can't get to the polls, absentee ballots work just fine with a bit of forethought.

What Internet voting would do, however, is jeopardize the public's faith in the integrity of the electoral process, no matter how secure and reliable such balloting is. Moreover, the first time a major ISP outage keeps thousands from voting in a razor-close race or a hacker beats the best security that election officials can muster, you'll need earplugs to drown out the howling of antigovernment conspiracy theorists.

The risks outweigh the rewards. Federal election commissioner David Mason acknowledged as much at that forum last week when he compared Internet voting to scaling a mountain: "We're going to climb it whether it's good for us or not."

That's too bad. Given what's at stake here — the very foundation of our society — the burden of proof ought to fall squarely on the shoulders of those who would lead us down the path to Internet voting. Let them demonstrate the tangible, substantial benefits of electronic balloting. Let them prove beyond a reasonable doubt that the risk of a security breach and/or an undermining of public confidence are not only low, but practically nil.

Then maybe they'll get my vote.

Nothing will remind a columnist more quickly that readers do not suffer fools gladly than a foolish math mistake. As several of you were kind enough to point out (really, not a gloater in the bunch) an item here last week about the dawdling pace of DSL availability incorrectly characterized 1.9 million out of 36 million households as amounting to "one-half of 1%." It's actually 5.27%.

How'd it happen? Doing the math right doesn't matter if you read the calculator wrong.

Kind rebukes, Internet news tips and gossip items should be sent to bnzz@nww.com.

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